The Mining Journal

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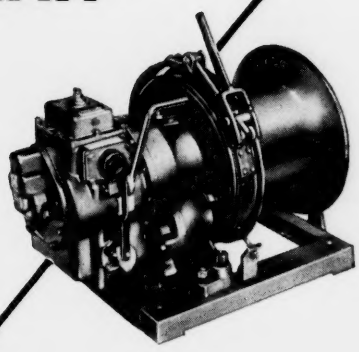

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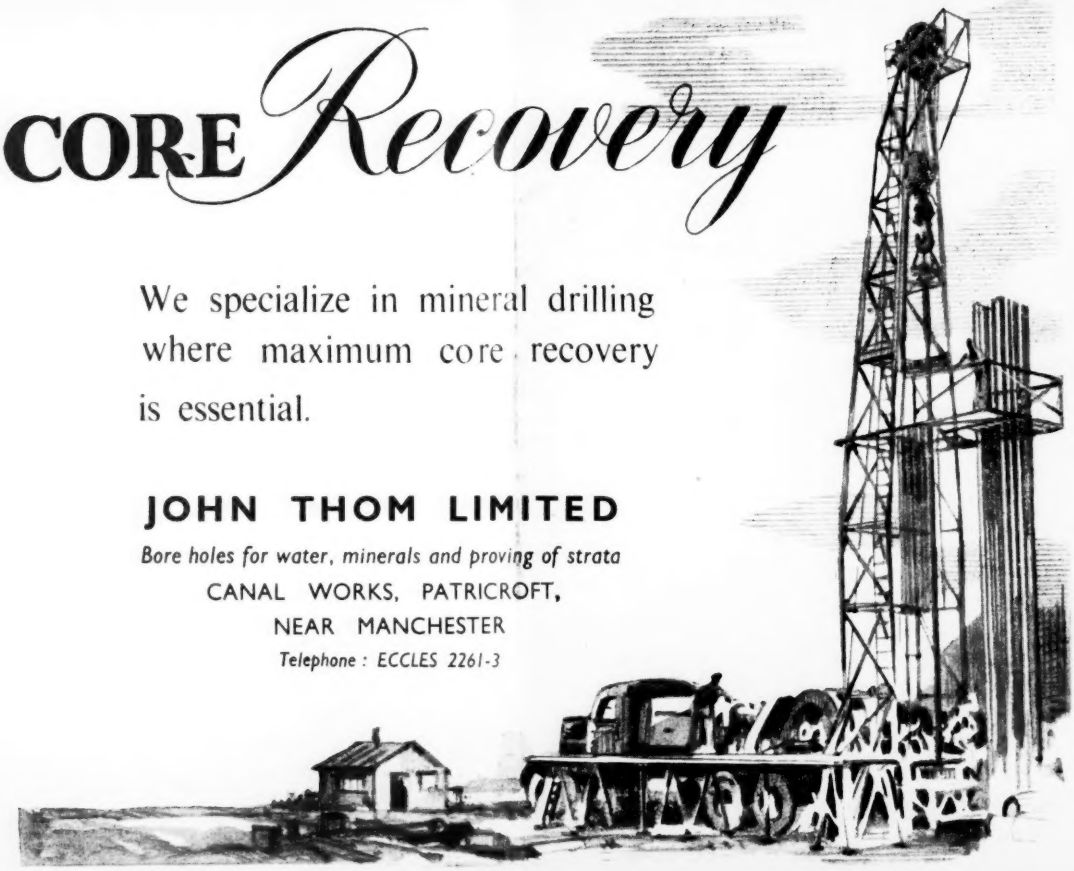

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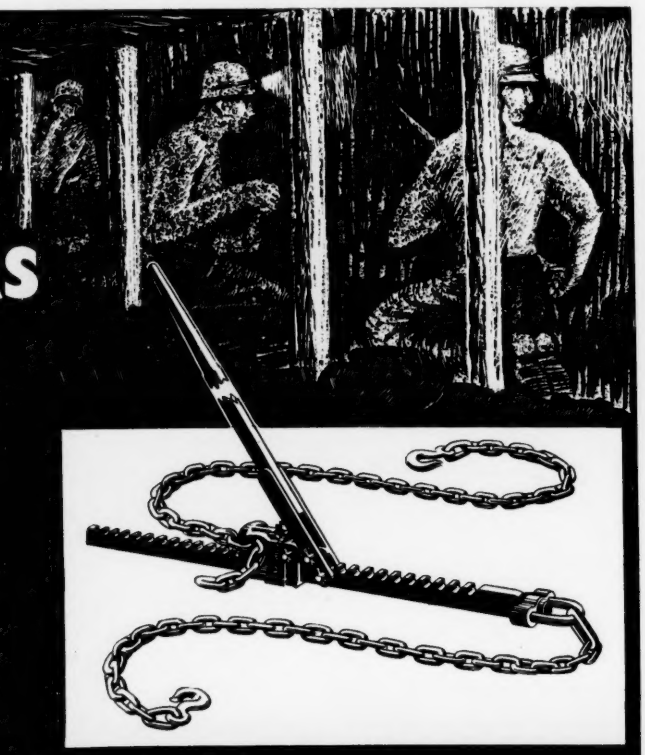

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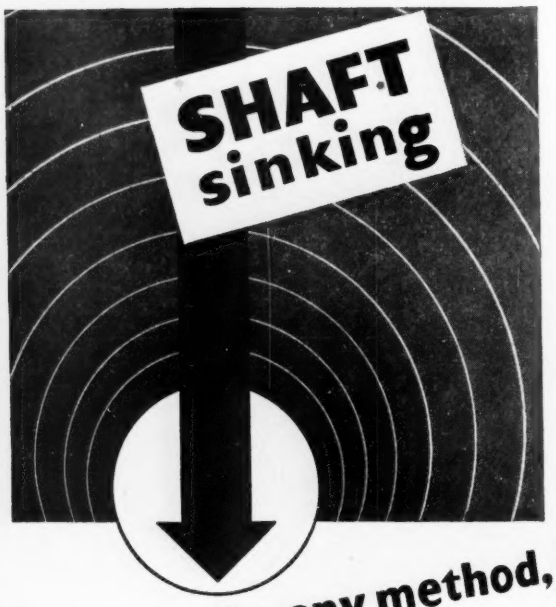

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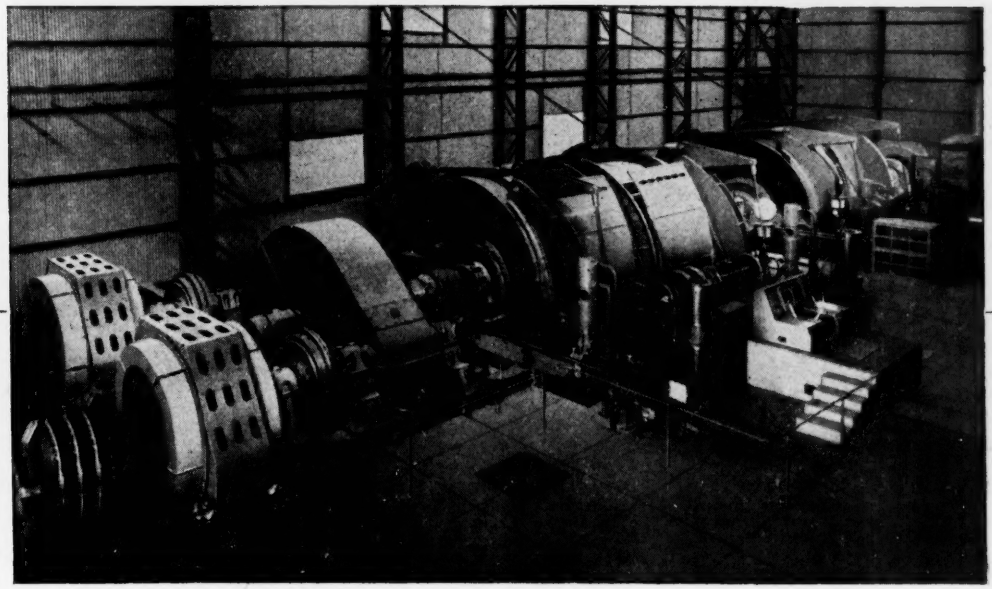

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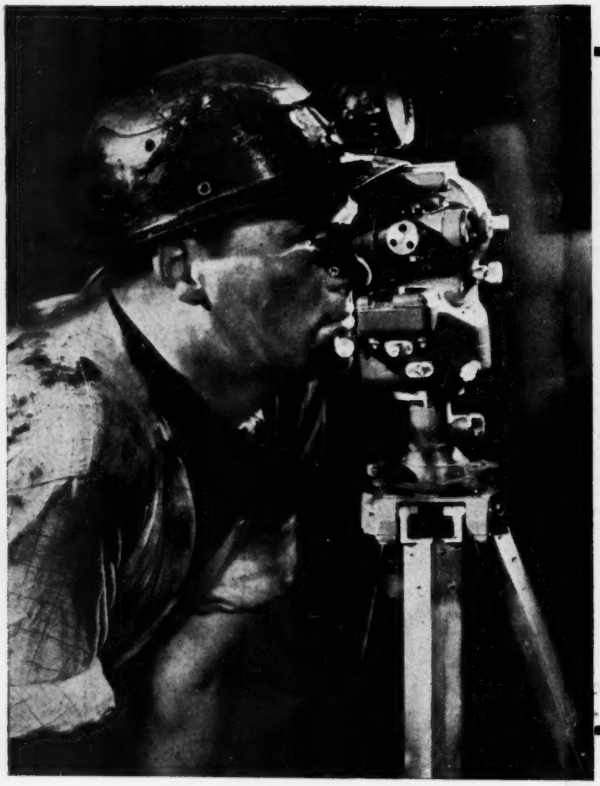

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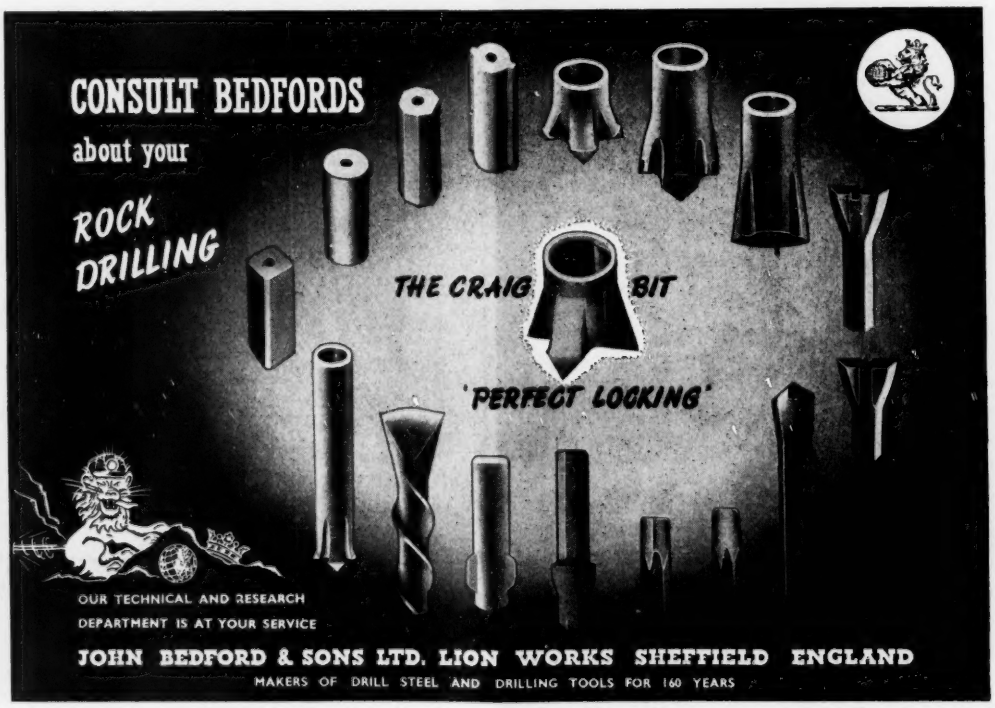
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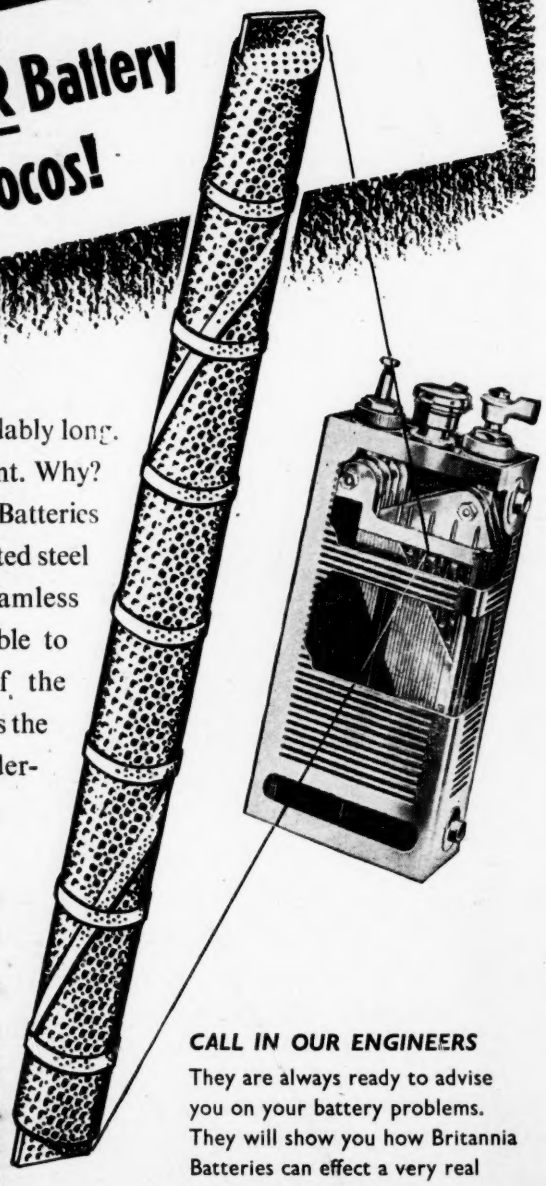

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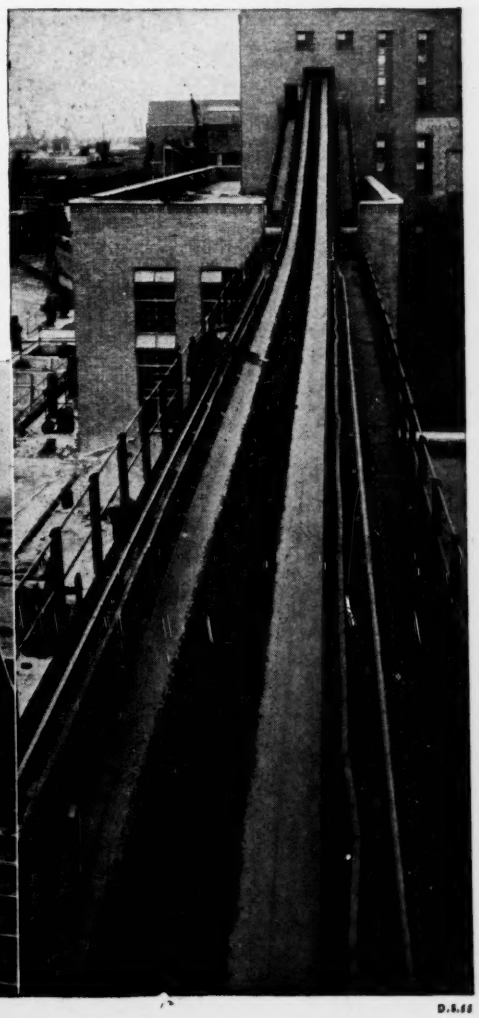

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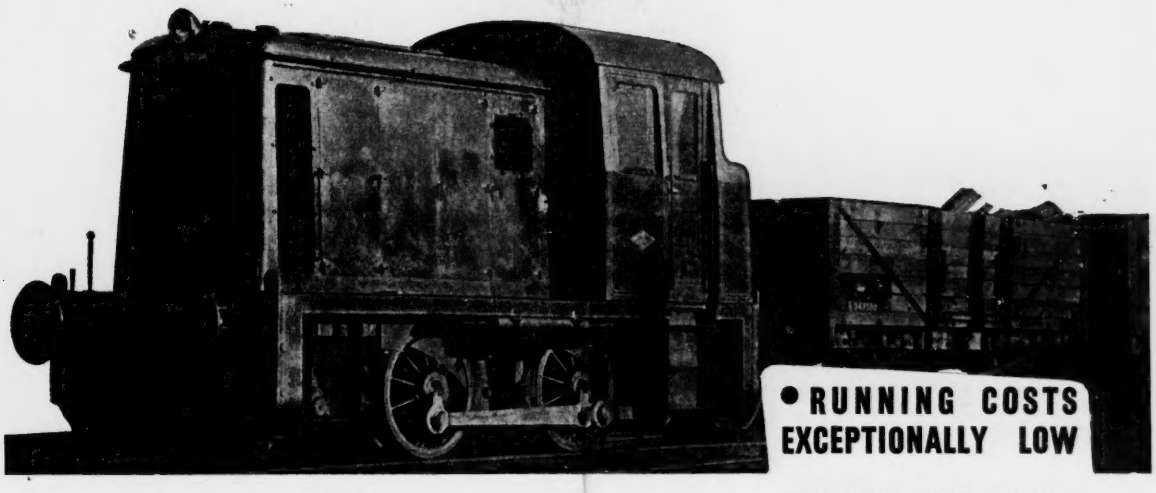

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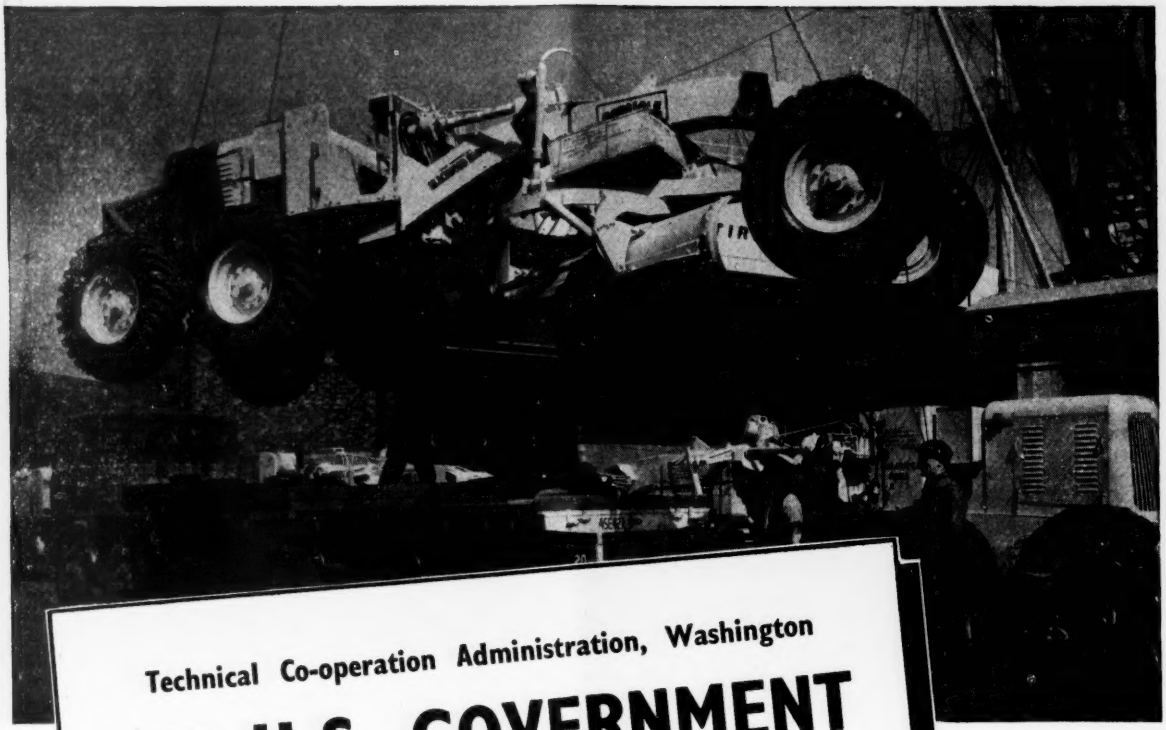

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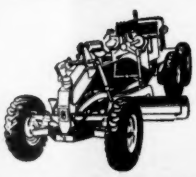

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The Mining Journal

Established 1835

Vol. CCXL No. 6149 LONDON, JUNE 26, 1953 Price 8d

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NOTES AND COMMENTS

The Tokyo Conference

Hopes that the conclusion of the second global war would be followed by an era of unprecedented prosperity and progress have been disappointed by the intensification of ideological differences, culminating in rearmament and Korea, which have divided the world into two armed camps. Yet there may be no real grounds for pessimism, and the failures of the past years to achieve world peace may eventually prove to have been of lesser significance, from a long-term standpoint, than the impressive progress which is being achieved through international co-operation in raising standards of living in the less highly developed countries.

A prosperous and well fed people has little time for carrying ideology to extremes. The ultimate—and only conclusive—solution to communism and unrest is neither political nor military but economic. Moreover, the greatest and most challenging problem facing mankind is not whether communist and democratic countries can be good neighbours, but whether in 20, 50 or a 100 years' time the world can produce enough foodstuffs and raw material to support its rapidly growing populations.

The existence of such organizations as the Economic Commission for Asia and the Far East (E.C.A.F.E.) is an encouraging reminder that sanity and realism still prevail. Both sides of the Iron Curtain are represented in this international body, which appears to be tackling its immense tasks with vigour and imagination.

Basic to increased food production and to all forms of economic progress are minerals and mining. The time has passed when the West could look to the Orient primarily as a store-house of raw materials. Increased supplies of raw materials are necessary for our own expanding economies and the growing world markets for minerals are contributing to the greater prosperity of backward countries. But that is no longer enough. If famines, unrest, and the decline of civilization itself are to be avoided, the indigenous resources of these countries must be used to establish local industries which can create employment, cut down living costs, and make a maximum contribution to world resources.

These are the realities behind the Regional Resources Conference held recently at Tokyo under the auspices of E.C.A.F.E., which provided the first opportunity for Asian and non-Asian mineral resources experts to meet and to discuss common mineral resources problems of the region. As a result, for the first time a fairly complete and accurate picture of the region's mineral resources position is available. It reveals all too clearly the immensity of the ground to be covered before these resources can be fully exploited, but a blueprint for future development based on international co-operation can now be prepared.

In view of the great interest taken in the Tokyo Conference and the very wide field covered by the agenda, the information emerging from its proceedings will be summarized in a series of articles, the first of which is published in this issue. From the facts available it is evident that, in accepting the conclusions which appear to have been unanimously adopted at Tokyo, geological and mining experts are faced with an immense and critically important task.

Power for the Copperbelt

Northern Rhodesian copper production has for some years now been bedevilled by shortage of power, due to the increase both in copper production and in demands on fuel throughout the Rhodesias. Recent announcements indicate, however, that long term plans have now been laid both to overcome this shortage and to cope with the probable expansion of the industry. These developments appear to fall into three phases.

First, over the next three years the copper companies plan to extend their existing thermal power stations so that by 1956 these will be able to produce sufficient power to meet the estimated Copperbelt load at that time, subject of course to the availability of coal supplies. In this connection the energetic development of the Wankie coalfield must be assumed now that the Anglo American group has assumed responsibility for its management. Moreover, once Federation has been achieved it is not unreasonable to look to a higher priority being accorded to deliveries to the Copperbelt. At the same time, the search for other coal deposits nearer to the mines will presumably be continued.

From 1957 onwards, when several new Copperbelt mines will be coming into production, these measures will of themselves be insufficient, and from this date onwards arrangements are being made with the Comité Spécial du Katanga and with the Union Minière for the importation of electric power into the Copperbelt from hydro-electric installations on Lualaba River. In this connection, obvious importance attaches to the announcement that appears on page 775 regarding Union Minière's plans to bring into production by 1957 its fourth power station which is planned to have an eventual output of more than double the company's three existing power stations.

Even so, as Sir Ernest Oppenheimer made clear in his recent annual statement at the Anglo American Corporation meeting, the copper industry's growing power requirements are again expected to outstrip available resources by the early 1960's, and at this point it seems that the Copperbelt companies are anticipating that the projected hydro-electric schemes at Kafue and Kariba will by then have reached a stage of advancement which would ensure the then additional power requirements.

The announcement in our issue of June 12 of the formation of the Rhodesia Congo Border Power Corporation, jointly by the Anglo American and Rhodesian Selection Trust groups, now appears as an important step in the consolidated financing of future power supplies in view of the recent news that the Corporation is to receive a loan from the Export-Import Bank of Washington of up to £8,000,000. This loan is to be repayable between 1957 and 1962 by the sale to the U.S. Defence Materials Procurement Agency of copper and cobalt from the mining companies concerned in the proportions of 75 per cent and 25 per cent respectively, one-fourth of the repayment and interest obligations being guaranteed respectively by Mufulira, Roan Antelope, Rhokana, and Nchanga. The loan will be applied both to the companies' own power station extensions planned over the next three years, and to the contract with the Congo producers which specifies a supply of 57 megawatts of hydro-electric power for five years beginning in 1957 with the option to extend the agreement.

Any additional expenditure not covered by the Export-Import Bank's credit will be provided by each of the four copper companies lending up to £750,000, without security, to the Power Corporation, with repayment to become due only after the debt to the Bank has been cleared. At the same time, each of the companies will be empowered to borrow from the Power Corporation the amounts required to meet the extensions which are made to their respective power plants. In this connection Roan and Mufulira are not expected to require to borrow more than £600,000 and £500,000 respectively.

Progress in West Africa

In these days of the rapid, but very varied, progress towards self-determination, which is manifesting itself so widely in Africa, British West Africa holds the close attention of the native races throughout the continent. Here, the most dramatic developments in the post-war years have been in the political evolution of the West African colonies, and already, in the case of the Gold Coast at least, it can be said, without, we trust, undue optimism, that the moderation, keenness and goodwill by the ministers of the colony's Africanized government have largely dissipated the fears of those who felt that the British government was endeavouring to travel too fast along the road which may eventually lead to Dominion status for the peoples of this corner of the Empire.

Politically Nigeria is also in process of rapid evolution, albeit less far advanced. It is as yet, however, a little early to evaluate the success of the new Constitution introduced just a year ago which sought to reverse the policy of centralization introduced by Lord Milverton in the 1946 Constitution; although the principle of a tripartite regional organization appears, superficially at least, the better suited to a country which, both religiously and racially, is so sharply divided.

If the march of political events is the more stimulating to the outside observer, it is by progress on the economic front that the success of these political experiments must to a considerable extent be judged. In this field the Bank of British West Africa stands to play an important part in the future as it has already done for more than 50 years. Elsewhere in this issue we publish the annual statement to shareholders, by the chairman, Lord Harlech, which serves as a timely reminder of the present accelerating tempo of industrial and agricultural development in the region.

At the present time the most urgent need is for practically all types of building material, and for a greatly increased number of trained technicians. Steps are being taken to establish colleges of arts, science and technology at Ibadan, Zaria and Enugu in Nigeria, while on the Gold Coast constructional work is proceeding on the new buildings for the University College and the Kumasi College of Technology. However, facilities for higher technical education in West Africa are still largely a matter for the future and the area must long remain dependent on British technical "know-how." Nevertheless, it is clear from the emphasis which has been placed on these facilities for technical training, that the peoples of West Africa are ready to take a long-term view of development of their territories and are coming to a widespread understanding of the value of labour saving machinery.

Lord Harlech touches in his statement on many current developments familiar to readers of *The Mining Journal*. Of these, the greatest will undoubtedly prove to be the Volta River scheme if, after the project has been thoroughly surveyed, it is finally decided to go ahead with it. In this connection it may not be out of place to emphasize that the scheme is not exclusively designed to exploit the Gold Coast's bauxite deposits but should rather be viewed as a hydro-electric power and irrigation programme which, quite aside from aluminium production, should pave the way for important agricultural development and the introduction of many secondary light industries essential to a more balanced economy. The plans for a new harbour at Tema are also part of this project.

Mineral exports from the Gold Coast have in recent years suffered considerably from shipment bottlenecks at Takoradi, but the new harbour at Tema, coupled with harbour extension work at present under way at Takoradi (which latter in itself represents one of West Africa's largest post-war development schemes), and the doubling of the track between Takoradi and Tarkwa should eventually solve this problem.

Despite a declared policy of encouraging some degree of industrialization and of increasing the participation of Nigerians in some of its less highly technical industries, Nigeria's economy to-day still remains based on its agricultural and mineral wealth. Of the latter, tin remains pre-eminent, despite the recent substantial fall in price, and it seems likely that for some mining companies at least this fall may be partly cushioned by the increased production of columbite for which the U.S. government is at present paying over £2,000 per ton of 65 per cent concentrates.

In Sierra Leone the output of chromite is expanding rapidly (exports in 1952 were about 40 per cent up at 22,490 tons) while production of diamonds and high-grade haematite continued at a satisfactory level. Altogether minerals represent about 30 per cent of the Colony's exports.

One of the Colony's major handicaps is the inadequacy of the road network in the hinterland and the development of highways and feeder roads to the railways are a necessity to the country's further economic advancement. In this connection, it is encouraging to learn of the recent announcement of a grant of £440,000, under the Colonial Development Welfare Act, for the laying of ten road bridges to replace ferry crossings, and of a further £160,000 for the laying of 160 miles of roadway.

At a time when the future of practically all commodity markets appears less certain than at any time since the 'thirties, any area, dependent so largely as is West Africa on the production of its primary products, is bound to view the economic future with misgivings which can only be allayed as the gradual industrialization of its peoples tends towards a more balanced economy.

South Africa

(From Our Own Correspondent)

Johannesburg, June 16.

Shaft-sinking techniques and headgear design have been in the front of mining news over the past month in this country. A new record has been set up at Vlakfontein G.M. and the new concrete headgears being constructed at Hartebeestfontein G.M. in the Klerksdorp area are a radical departure from standard practice.

During May, No. 2 shaft at Vlakfontein was advanced 585 ft. to break the previous world's record held by Virginia G.M. in the Free State which was set up in April, 1951. Mining circles are watching the position with interest, as it is considered that an excellent chance exists of the 600 ft. mark being passed before the shaft is completed. At the end of May, the shaft had reached a depth of 3,933 ft. When completed it will be approximately 6,800 ft. in depth and will be the deepest single-lift shaft in the world —the present being at Vogelstruisbult (6,600 ft.). The advance made at Vlakfontein included lining the shaft wall with monolithic concrete to the finished internal diameter of 24 ft. Sinking and lining operations are on a three-shift continuous basis. The Vlakfontein record is the more notable in view of the shaft being sunk through harder formations than at Virginia and at a depth of 3,000 ft. compared with Virginia's 1,000 ft.

MECHANICAL SHAFT CLEARANCE

The major factor in setting the record has been the use of a power-operated cactus grab for cleaning out the shaft bottom after blasting. A grab of this nature was first designed and used at Western Holdings in the Free State some time ago, where it gave most encouraging results. The original design has been modified by the New Consolidated Gold Fields technical staff. Details of the modifications have not yet been released, but it seems that a major change is the use of cactus-type jaws instead of two separately pivoted jaws in the original model. It is understood that the use of the grab has eliminated the need for large gangs of lashing boys to clean the shaft.

A particular source of pride to Vlakfontein is that the world record has returned to them. This mine held it from 1936 to 1941 with 422 ft. In the latter year it lost it to Van Dyk where an unlined shaft was sunk 461 ft. Virginia topped this figure in 1951 with 504 ft.

Vlakfontein's achievement will probably be given a full go at the Hartebeestfontein mine, which lies immediately to the south of Stilfontein G.M. in the Klerksdorp area. It is under the technical control of Anglo-Transvaal which was responsible for the Virginia record. It is certain that the engineering side and the Anglovaal shaft-sinking team will go flat out to recapture the record. Two shafts are being put down. They are 21 ft. in diameter concrete lined throughout, equipped with four compartments. No. 1 is an upcast shaft and will be sunk to a final depth of 3,500 ft., intersecting the Vaal reef horizon at approximately 3,000 ft. No. 2 shaft will be sunk in two stages. The first will be to a depth equal to the final depth of No. 1 shaft, at which level the two shafts will be connected up. After about five years it will be carried to its final depth of about 6,500 ft., and the Vaal reef should be intersected at about 6,000 ft. A mechanical grab will be used in the sinking of No. 1 shaft and probably at No. 2. Double drum 1,150 h.p. winders will be installed at No. 1 shaft and also at No. 2 shaft for the first stage of sinking and operating.

DEVELOPMENTS IN HEADGEAR DESIGN

As regards changes in headgear design: although generally the supply of materials in South Africa is improving, there is still an acute shortage of structural steel, bound up with which are high prices and comparatively long delivery; cement and mild reinforcing steel, however, are relatively in free supply.

One concrete headgear is in operation at Stilfontein, but the design is along conventional lines. So far as Hartebeestfontein is concerned, the line of thought was developed that, in effect, the headgear of a shaft is merely an extension of the shaft collar. Practice at Consolidated Murchison was partly responsible for this idea, for there a number of shafts are sunk on the sides of the hills of the Murchison range with the ground forming three sides of the headgear structure.

The two headgears will be circular in shape. No. 1 shaft has been sited at a point from which the shallow south-eastern section of the mine can be speedily opened up. In the initial stages of development it will be used for hoisting men, materials, rock and ore, but when the two shafts are connected up it will be used for men and materials only. The headgear will be circular in shape representing an extension of the shaft lining. It will be about 80 ft. to the sheave platform. Servicing and maintenance will be aided by a boom-crane mounted on the platform in place of the usual gantry.

The No. 2 shaft will, in due course, be the main hoisting unit, with a capacity of 100,000 tons of ore a month. It will also be circular, but the headgear will widen at the base, resembling an electric power station cooling tower in appearance. Hoisted ore will be tipped into a small surge bin at the headgear, where it will be fed on to a conveyor belt for transport to the mill stockpile. This system is similar to that being installed at Virginia to ensure a clear and clean area immediately round the shaft bank. This headgear will be some 120 ft. in height.

TIME SAVING

All these developments are cutting down the time required to bring new mines to the actual production stage—a most important factor in these days of high costs and shortage of capital. A further beneficial factor is the agreement reached with the Government Department of Mines to recognize a concrete lined shaft with a brattice wall as two shafts for ventilation purposes. Previous to this, underground stoping could not be conducted on a large scale until at least two shafts on a property had been connected up underground. In consequence, production started up at a number of mines with insufficient stope faces to feed the mill, and they operated for many months at a loss due to having to mill development rock. The new arrangement means that it will be possible for a relatively large amount of development to be done in advance of the start of milling and that profitable operations will result far sooner than has happened in the past.

Some Iron Ores of Egypt

By Professor B. W. HOLMAN, O.B.E.

The following article presents the more important details of certain of the iron ore deposits of Egypt, notably those of Asswan and Wadi Kereim. The article is printed by permission of the Desert Research Institute, Heliopolis, and the author concludes his remarks by suggesting further investigations into Egyptian deposits as well as noting the difficulties of iron production by blast furnace in that country.

Magnetite (70% Fe) and haematite (66.5% Fe) are the principal constituents of most of the iron ores worked successfully in various parts of the world. Deposits of these two minerals, either separately or together, are known to exist at various places in Egypt and Sinai, although most of the deposits contain twenty per cent or more of impurities. A memoir by Dr. M. I. Attia on the better known of these deposits was published in 1950 by the Geological Survey.

Owing to present circumstances it is suggested that a series of tests should be carried out to determine the constitution and amenability to concentration and enrichment of those deposits which appear likely to yield a sufficient grade and tonnage of iron ore. Such tests are a useful preliminary to the more costly task of large scale separation tests, while on the other hand they may save unnecessary work by showing that the ore does not need treatment. This matter is now of economic as well as scientific interest.

ACTIVITIES IN ASSWAN

In Asswan much of the ore occurs as a flat bed half a metre or more in thickness, situated close to the surface. Two rows of pits were made in the deposit in 1937 and ore reserves were estimated at 13,500,000 tons. Since that time various reports have estimated the possible tonnage of the Asswan deposit, but the report published in November, 1950, estimates possible ore at 80,000,000 tons and probable ore at approximately 10,000,000 tons of which less than 4,000,000 tons is regarded as proved. Little additional exposure of the ore as a basis of further estimations appears to have been carried out since 1937.

The ore at Asswan is an oolite haematite which averages approximately 47 per cent Fe on the basis of the samples taken in 1950. Phosphorous content is about 1 per cent, sulphur content less than 0.1 per cent, and silica content is 13 per cent. The ore thus requires approximately 0.75 tons of limestone as a flux if blast furnace smelted. The nearest examined deposit of limestone is about 80 kilometres distant.

The Asswan deposit, being extensive, flat and near the surface, lends itself to mechanical mining and loading methods, but these operations would prove expensive because of the thin layers to be excavated. Cost of mining and loading by mechanized means has been estimated at £E 0.75. per ton, and mining and loading by manual labour has been recommended in order to create employment. But this would be uneconomical owing to the fact that the output per man would be seriously reduced by the climatic conditions prevailing during the summer months, a factor which has been proved even on the East Coast.

Apart from the well known iron ore of Asswan, some of the other deposits might provide a useful reserve of iron ore in Egypt for times of emergency, while others may prove to be of no value for local consumption because of their geographical position. Some of these latter deposits might be suitable for export purposes and this measure would provide foreign exchange needed to pay for other imports as well as increasing the habitable area of the desert. In such cases the cost of transport to the coast would be a major factor.

The composition of the ore in these deposits has not been investigated in any detail from the point of view of their value for smelting or their amenability to enrichment, except in the case of the magnetite deposits of Wadi Kereim, situated about 40 kilometres from Kosseir in a south-westerly direction.

THE WADI KEREIM ORE

Fifteen samples taken by the Kosseir Phosphate Company contained from 44% to 62% Fe with an average content of about 50% Fe (70% Fe_3O_4) but the silica content was twenty per cent or more in ten of the samples. Unfortunately the silica in this magnetite-quartz schist, as well as being excessive, is intimately associated with the magnetite, and thus the deposits were for years considered uneconomical.

A most important question is how finely is the quartz disseminated? The answer would indicate whether or not magnetic separation, or some other separation process, could or could not be used apart from economic considerations which would have to be separately considered.

In order to investigate the question of the degree of dissemination of the silica, a sample made up from fifteen new samples of exposures of the ore was obtained with the help of the Department of Mines. Portions of the samples were crushed to pass ten mesh, sixty mesh and eighty mesh screens and were treated by magnetic separation. The results obtained are shown in Tables 1 and 2. In each case the samples were further sized by sieving on a 270 mesh ASTM screen to give a coarser and a finer product for separate treatment.

The results given in Table 1 show that, although a very poor separation had been obtained with coarser crushing, a very satisfactory separation was obtained after crushing to pass 60 mesh.

Examination of sections of the ore under the microscope by Dr. Attia had shown that the quartz and magnetite were intimately associated in this quartz-magnetite schist and that therefore a good separation might not be obtainable. These small scale separation tests have shown conclusively that a good separation is obtainable on the composite sample submitted but its value must be confirmed or otherwise by the assays.

In conclusion, it is suggested that these results, together with those obtained on ilmenite, are examples of the value of preliminary ore treatment tests and of how such tests can yield definite information of fundamental importance to the planning of future work on a larger scale. As to the tonnage concerned, "a very rough estimate" of the probable ore is given by Dr. Attia, in his memoir, as 30,000,000 tons. Further work on this subject is in hand.

OTHER OCCURRENCES

The Wadi Kereim ore occurs in fairly steeply inclined bands which attain a maximum thickness of 17 metres, and could be mined by standard methods. During the summer months mining could commence before sunrise so that the shift could be completed before the mine warmed up. The miners would not be exposed to the direct rays of the sun as would be the case with surface workers.

There is a geologically similar deposit, estimated at

20,000,000 tons at Wadi Um Siwiqat, seventy kilometres south of Wadi Kereim and fifty kilometres from the Red Sea coast. In the Wadi Um-Hagallg area, thirty kilometres south-east of Wadi Um Siwiqat and about twenty kilometres from the Red Sea coast there is another geologically similar deposit estimated at 15,000,000 tons. These deposits are described in a paper by Dr. Attia in the Bulletin of the Institute of Egypt (August, 1949).

COMPARATIVELY PURE MAGNETITE

Another interesting deposit of iron ore occurs about two hundred and ten kilometres further south and thirty kilometres from the Red Sea coast (south of Ras Benas) at Abu-Nekheil. This large deposit consists of comparatively pure magnetite.

The results of a magnetic separation test on a sample of the ore crushed to pass thirty mesh and rescreened on a 270 mesh sieve are given in Table 3.

The richness of this sample would render both magnetic separation and water concentration unnecessary if the bulk of the deposit approximates to the quality of this sample.

A DEPOSIT OF HAEMATITE

The four deposits so far noted are all of magnetite. That in the Um-Tanadib area on the east coast is a haematite deposit with some magnetite. A specimen from this deposit contained 68.6% iron and 0.8% silica. Magnetic separation gave 1.3% by weight of non-magnetic material.

The results of magnetic separation tests on this ore are given in Table 4.

The richness of this sample would render both magnetic separation and water concentration unnecessary if the bulk of the deposit approximated to the quality of this pilot sample. Little exploration work has been done on this deposit. It does not appear to be large but might be of value for mixing, as mined, with one of the magnetite ores high in silica. The ore is associated with limestone.

In so far as further work is concerned, it is suggested that first, a list be made of all the known deposits of iron ore in Egypt and Sinai, together with the available information on their richness, composition, accessability and probable tonnage. This list would be an extension of that made by Dr. M. I. Attia. Second, it is suggested that tours of inspection be made to those deposits which are more readily accessible for the purpose of determining the desirability of their further examination. Finally, it is suggested that further examination of the selected deposits be then made to determine the possibility or otherwise of their exploitation. This work would involve investigations of the iron content, composition and constitution of the ores as well as of their mode of occurrence and the mining conditions.

INADEQUATE FUEL SUPPLY

Owing to the small demand in Egypt for refractories for steel furnaces, local deposits of suitable refactories have not been adequately examined. This should be done. Oil provides the sole local fuel supply, while the amount of charcoal available would be inadequate even in Upper Egypt.

At the same time, the importation of coke for fuel offers special difficulties and would render a possible Egyptian iron and steel industry dependent in foreign imports. Hydro-electric power may be used as a substitute for fuel at Asswan in the supplying of heat, but it cannot be used as a substitute for coke in the iron reduction process.

All these factors suggest iron production in Egypt by some means other than the blast furnace, although this method would prove eminently suitable for the Asswan ore if a coke supply were available. It may be noted, however, that consideration of the supply of fluxes and scrap steel offers a much more optimistic picture than that offered by the availability of fuel.

TABLE 1

WADI KEREIM ORE −60 Mesh

Mesh	*Product*	*Weight* %	
−60 +270	Concentrate	27.7	
	Middling	11.9	
	Tailing	7.6	47.2
−270	Concentrate	13.2	
	Middling	22.2	
	Tailing	17.4	52.8
		100.0	100.0
Total −60	Concentrate	40.9	
	Middling	34.1	
	Tailing	25.0	
		100.0	

TABLE 2

WADI KEREIM ORE −80 Mesh

Mesh	*Product*	*Weight* %	
−80 +270	Concentrate	16.0	
	Middling	2.4	
	Tailing	6.3	24.7
−270	Concentrate	42.9	
	Middling	15.8	
	Tailing	16.6	75.3
		100.0	100.0
Total −80	Concentrate	58.9	
	Middling	18.2	
	Tailing	22.9	
		100.0	

TABLE 3

Mesh	*Product*	*Weight* %	
−30 +270	Magnetite	80.4	
−270	Gangue	5.3	85.7
−270	Magnetite	10.0	
	Gangue	4.3	14.3
		100.0	100.0

Combined results show magnetite at 90.4% by weight, and gangue at 9.6% by weight.

TABLE 4

SAMPLE CRUSHED TO −30 MESH

Mesh	*Product*	*Weight* %	
−30 +270	Haematite	75.7	
−270	Gangue	1.0	76.7
−270	Haematite	23.0	
	Gangue	0.3	23.3
		100.0	100.0

Combined results show haematite at 98.7% by weight, and gangue at 1.3% by weight.

SAMPLE CRUSHED TO −80 MESH

Mesh	*Product*	*Weight* %	
−90 +270	Haematite	54.0	
	Gangue	1.0	55.0
−270	Haematite	45.0	
	Gangue	0.0	45.0
		100.0	100.0

Combined results show haematite product at 98.7% by weight, and gangue at 1.3% by weight.

Asia's Mineral Resources

The Regional Conference on Mineral Resource Development, which was held a few weeks ago in Tokyo under the auspices of the United Nations Economic Commission for Asia and the Far East, brought together a considerable amount of information some of which will be unfamiliar to our readers. The article which follows reviews the work of the Conference as a whole. In later issues we shall be dealing at greater length with the progress which is being made with the various geological surveys operating in the Far East and with the information submitted to the Conference on the known non-ferrous mineral resources of the region.

Asia's mineral wealth is for the most part still untapped and its extent remains largely unknown. Though the potential mineral resources seem very great, their development requires to be speeded up in order that they may effectively contribute to the improvement of Asia's standard of living and to the welfare of the Asian peoples.

Hitherto one of the principal factors limiting the development of Asia and the Far East has been the absence of any scientific and co-ordinated approach to the immense problems involved in the better utilization of indigenous mineral resources. Since minerals constitute the key raw materials for the machines and structures of industrial society, they are of particular importance to countries at an early stage of economic development. Domestic use of local mineral supplies has increased as a result of recent advances in certain parts of Asia, but only a small fraction of the total output is processed in the producing country for local use.

Asian countries are now moving towards industrialization and some of them have made encouraging progress in the establishment of mineral processing industries. One of the principal difficulties to be overcome is the absence of accurate information concerning available reserves. From this standpoint alone the Regional Mineral Resources Conference, held at Tokyo from April 20-30 this year, might be described as marking the beginning of a new era in the economic history of Asia and the Far East.

THE VALUE OF CO-OPERATION

Held under the auspices of the Economic Commission for Asia and the Far East (ECAFE), this conference was attended by 120 delegates from twenty Asian and Non-Asian countries. Geologists, mining engineers and government experts came from Australia, Burma, China, France, India, Indonesia, Netherlands, Philippines, Thailand, U.S.S.R., U.K. and U.S.A., all of which are members of ECAFE. Invitations were also extended to several non-members, namely Hong Kong, Malaya, British Borneo, Korea and Japan. An observer was present from Israel, and there were also observers from the International Chamber of Commerce and the World Federation of the United Nation's Association (WFUNA). The delegates selected as their chairman Mr. Shinrokuro Hidaka, head of the Japanese delegation, and as vice-chairman Dr. V. R. Khedker of India.

ECAFE's experts recognize that no one country can hope to find within its own borders all the minerals required, and that international co-operation in mineral resources development is therefore absolutely essential. The Tokyo conference presented geological experts from the region with their first opportunity of coming together to discuss common problems. One of its most striking features was the emphasis laid by delegates on the value of a co-operative approach and the need for a continuous review of existing problems. The possibility of establishing a separate ECAFE sub-committee on mineral resources was considered, together with the question of yet another *ad hoc* conference on mineral resources development. The decision on this question rests with ECAFE's committee on industry and trade.

An important outcome of the conference was that it brought together far more information than was previously available regarding the mineral resources and the extent to which surveying had been carried out in the countries of the region. Extensive reports, both verbally and in writing, were supplied by the participating delegations on the mineral resources position in their own countries. These reports included information on the progress of geological surveys, the training and acquisition of geologists, geological survey methods, and laboratory facilities. Well over eighty authoritative papers were prepared for the conference by governmental experts from many countries, the Technical Assistance Administration of the United Nations, and ECAFE. It is considered, therefore, that for the first time there exists a fairly complete, comprehensive and accurate picture of the region's mineral resources position.

EMPHASIS ON SELF SUFFICIENCY

The general tendency was to approach the possibilities of increased mineral resources production on a regional basis. In other words, the emphasis was on the extent to which local resources could be exploited to supply and develop local industries from the smelter stage onwards, and on the extent to which these resources could augment exports of the region as a whole. Delegates regarded the role of mineral resources in the economic development of the area as a more important consideration than the potential contribution which the area could make to world raw material markets.

Particular emphasis was laid on the importance of systematic geological surveys and of proper mapping of the region on a much larger scale. This emphasis is important in that governments often seem more ready to supply funds for specific mineral investigations than for the less immediately productive overall geological survey, which alone can reveal the full potentialities of mineral resources. Attention was drawn to the need for surveying and prospecting measures both to increase the exploitation of existing mines and to break the ground for the production of new mines. Governments were urged to consider the possibilities of modern prospecting methods, including the use of helicopters. At the same time, it was pointed out that systematic ground surveys by trained staff remained essential.

NON METALLICS AND LOW GRADE DEPOSITS

While stressing the need for aerial surveys and other exploratory measures, ECAFE's experts considered it unlikely that any new sensational discoveries would be made. They pointed out that more attention was now being paid in exploratory activities of this kind to the discovery of non-metallics and low-grade deposits than to those of high grades. This tendency was acceptable to the delegates, who were as one in recommending that increased attention be given to the exploration of lower grade deposits. Their views were based on the fact that the region is rich in lower grade deposits (most of which are still unexplored), while there is deficiency in higher grade deposits; moreover, some of the higher grade deposits are nearing exhaustion.

Finance is, of course, one of the prime considerations in minerals development. So far as is known, no specific instances were cited of deposits which were remaining unworked for lack of capital. On the other hand, India

made it quite clear that her most essential requirement was outside capital, and the general reaction to India's attitude suggested that other countries were similarly placed. In this connection it was noteworthy that regional representatives of the UNTAA (Technical Assistance Authority) attended the conference and presented a paper summarizing the technical assistance in the field of mineral resources development, which has been provided to the countries of the region since 1949 under the United Nations Expanded Programme of Technical Aid.

SCOPE OF SECRETARIAT'S OPERATIONS

The Executive Secretary gave a brief review of the Secretariat's activities in the field of mineral resources during the past few years. Work in this field started in 1948, when the Industrial Development Working Party covered coal, petroleum, metals and ores, and raw materials for fertilizer manufacture. Since then the work has fallen into four main categories, namely:

1 Comprehensive studies on selected mineral resources.
2. Advisory services on request. Such services have so far been rendered to Burma, Ceylon and Korea, and will be extended to Laos.
3. Dissemination of information to governments on important mining developments in the region and on modern technical developments; examination of the possibilities of applying these developments to mining operations in the region.
4. Preparation for the convening of the Regional Conference on Mineral Resources Development and servicing other related ECAFE meetings.

The current work programme, as approved by the Commission at its ninth session in Bandung, Indonesia, in February 1953, follows essentially these lines.

In appealing for suggestions regarding ways and means of accelerating minerals development, the Executive Secretary pointed out that the Commission was in a position to suggest action of regional significance, to serve as a clearing house for technical information, to bring experts together for discussion, and to co-ordinate specific activities, such as research laboratory and pilot plant tests, carried out in more than one country. He emphasized, however, that as both the staff and financial resources of the Secretariat were limited, to undertake any work of real value was largely dependent on the co-operation and contribution of appropriate authorities and experts of countries of the region. It therefore seemed appropriate to have a regular expert body to deal with mineral resources.

DEVELOPMENT OF COAL INDUSTRY

In surveying the mineral resources situation of the region, the executive secretary drew attention to the very small output of mineral fuels in comparison with the world production. A healthy trend towards the development of the coal industry in the region has been noticeable since World War II. Countries which previously had no production have made attempts to start an indigenous coal industry, while others are planning either to increase production or to make full use of low-grade coals and to conserve higher-grade ones. The existing knowledge of coal resources of the region is fairly advanced. The predominance of lignite deposits in many countries, the limitation of higher-grade coal in a few, and the shortage of coking coal in all except China and India, are the chief characteristics of the coal resources of the region. To prolong the life of the known coking coal fields and to make full utilization of low-grades are thus matters of prime importance.

Of particular interest, therefore, was the debate on coal and lignites. In view of the considerable difficulties obstructing the exploration of lignite in the ECAFE region, the experts suggested that the development of lignites should be carried out step by step. Lignites should be used in the first place for developing power and steam generation, and only in a later stage for metallurgical purposes. A new field for their use might be opened by their introduction as a domestic fuel in Asian households where charcoal and firewood are still widely employed.

Many detailed technical suggestions were put forward for utilizing lower rank bituminous coal so as to conserve higher rank coals for metallurgical purposes. These suggestions included up-grading operations such as washing, screening, briquetting, etc. Suggestions for coal classification were submitted by the delegations from India and Japan. This scarcely seems a matter for world agreement, since coal classifications are rarely of more than regional importance. The conference felt that the proposals required thorough examination, and it was recommended that as a first step they should be sent to the appropriate authorities in the various ECAFE countries, whose considered opinion should then be communicated to the ECAFE Secretariat for collation and circulation.

DELEGATION TO STUDY AUSTRALIAN METHODS

A valuable decision was to send a study group to Australia with the help of the UNTAA for the purpose of studying methods of exploiting and using Australian lignites and brown coals.

The conference strongly recommended that no high grade minerals be used for inferior purposes if inferior coals or other minerals could be used. For instance, metallurgical coal should not be used for locomotive power if other grades can be employed.

The petroleum resources of the region are not evenly distributed, but conditions may change if more exploration and drilling can take place. The executive secretary pointed out that exploration for oil in this region would be more expensive for the time being than in countries like the United States. One reason is that all equipment has to be shipped overseas and all technical facilities have to be provided, even in the most outlandish areas. In the industrially developed countries, these facilities are often available at the end of a telephone line.

India possesses two-thirds of the known iron ore reserves of the region, followed by China. The largest known reserves of the Philippines and Indonesia do not have the same value as others as they contain high nickel and chromium contents. Hong Kong, the Philippines and the Federation of Malaya are producing iron entirely for export. The reserves of other countries are small. So far as ferro-alloy metals are concerned, the region is well off in tungsten, manganese and titanium; moderately supplied with molybdenum, chromium and vanadium, but poor in others, including nickel and cobalt.

INVESTIGATION OF FERRO-ALLOYS PRODUCTION

The delegates observed with some concern that there is hardly any processing plant for ferro-alloy minerals in the region and that, save in Japan and India, these minerals are produced almost entirely for export. The Indian delegate reported that experiments with the processing of ferro-alloys were being conducted in India and observed that this work exceeded the resources of any single country.

The conference recommended that consideration be given to the establishment of a pilot plant in the region, with assistance from UNTAA, for the double purpose of investigating the manufacture of pig iron with non-coking coal and the production of ferro-alloys.

It was recommended that more attention should be paid to the possibilities of titanium, columbium and tantalum, since these minerals have been finding increasing applications in recent years.

In the course of country by country reports, the U.S.S.R. delegation gave the following figures for U.S.S.R. production in 1952: pig iron 25,000,000 tons; steel 35,000,000 tons; petroleum 47,000,000 tons; coal over 300,000,000 tons.

The conference was not concerned with political considerations as such. Nevertheless, it was evident that political uncertainties in the region must currently be a deterrent to private investment. On the other hand, it emerged very clearly from the conference that any change in China's foreign policies could have a very great effect on the self-sufficiency of the area, particularly having regard to Japan's need for additional supplies of bauxite, copper, tin and iron ores to feed her smelting capacity. This capacity might be used to the benefit of other countries.

National Coal Board Research Establishments

Writing under recent date our Coal Correspondent recalls that a reference was made in our issue of March 13, 1953, to some aspects of the work done at the research establishments of the Ministry of Fuel and Power. The Ministry is concerned solely with statutory requirements relating to safety in mines but the work carried out by the National Coal Board necessarily covers a wider field. During 1952 the Board spent £448,000 on scientific and technological investigations exclusive of researches in the fields of medicine and human relations. The total cost this year will be in the region of £750,000, or 0.75d. per ton of coal produced. About 60 per cent of the total expenditure covers the work done at the Board's own establishments and the remainder is spent on work done in conjunction with other organizations such as the Coal Survey and the British Coal Utilization Research Association, and at Universities.

Day-to-day testing is done at laboratories in each of the Areas but long-term investigations are made at the central establishments at Stoke Orchard, near Cheltenham, and at Worton Hall, Isleworth, Middlesex. The former now deals only with problems relating to the physics and chemistry of coal and its products whilst the newer establishment at Isleworth deals only with mining engineering problems. Some indication of the nature of the work which has been started here was given recently by the Director General of Research, Dr. W. Idris Jones,[1] who selected for particular reference some investigations on coal ploughing and rotary drilling.

COAL PLOUGHS

Ploughing is regarded as one of the most desirable and economic methods of extracting coal at the face and the Board are therefore reluctant to give up the struggle to adapt the plough to the relatively hard coals in this country. A close study is being made of the mechanical structure of the seams with a view to the rational design of ploughshares and of hauling and propelling mechanisms. The optimum blade angles have been determined for some seams and it is found that the thrust applied to the blade can be appreciably reduced if the blade is kept in vibration as it moves along the face. German mining engineers were experimenting during the war with the principle of resonance as an aid to the cutting and conveying of coal. It is not stated whether the work done at Isleworth is following along these lines but a prototype plough with an oscillating or vibrating blade is being tried out in Monmouthshire.

EXPERIMENTS WITH ROTARY DRILLS

Experiments with rotary drills in sandstone and other rocks have shown that when a bit of 1$\frac{11}{16}$ in. in diameter is rotating at 300 r.p.m. and the thrust on it is less than 150 lb. the cutting edges wear down rapidly with consequent reduction in the rate of penetration and an increase in the rate of production of dust. This thrust is apparently not enough to make the drill bite and drilling then proceeds mainly by abrasion. When the thrust becomes greater than 150 lb. there is a sudden change in the mode of cutting and the rate of penetration thereafter increases rapidly with the thrust until the drill becomes choked with cuttings. Similar results have been obtained independently by H. S. Alpan[2] in experiments with rotary drills.

To increase the rate of penetration beyond the maximum rate at which clogging occurs with solid rods, a drill consisting of a hollow tube 1$\frac{1}{2}$ in. in diameter with tungsten-carbide bits and a small water tube welded to the inner wall of the drill tube has been developed. It is claimed that chippings up to $\frac{1}{2}$ in. in size are readily flushed out through the tube and that fine dust is completely suppressed. The results obtained in some comparative tests with this drill and a standard type are given in the table.

	Drill	*Thrust lb.*	*Penetration ft. per min.*
1.	Standard drill (hand-held)	50	0.1
2.	Standard drill at point of clogging	450	3.0
3.	Hollow rod at point of clogging	800	6.5

A novel method of measuring small amounts of wear on bits after the drill has penetrated only a foot or so of rock is now being used at Isleworth by irradiating the bit to a given level of radioactivity at Harwell and then observing the radioactivity in the cuttings as they are flushed from the hole.

DRAINAGE AND UTILIZATION OF METHANE

The drainage and utilization of methane is a subject which is receiving close attention at the present time. Systematic experiments were started at various collieries in 1950 and a number of installations are now in operation, using the borehole method of tapping and collecting the gas from the strata above or below the working faces and transmitting it to the surface through pipe lines laid down for the purpose. The mode of occurrence of methane in coal was first investigated by J. Ivon Graham and this work is now being continued at Stoke Orchard. It is, however, not yet clear how the gas is released when the strata is disturbed by mining operations but it appears that the rate of flow from a given borehole increases with time and reaches a maximum when the face has advanced about 100 yards beyond it, after which the yield decreases. The purity of the gas drawn from the boreholes is usually very high and it often contains more than 90 per cent of methane.

The technique is generally simple, a borehole 1$\frac{7}{8}$ in. in diameter is drilled vertically upwards or sloping forward to a depth of about 130 ft., usually on the upper side of the top gate road near the face. A short pipe from the gas main is then sealed into the hole and the gas is drawn off under its own pressure or under vacuum. The maximum rate of flow from such a borehole is sometimes more than 200 cu. ft. per minute and a total quantity of over 8,000,000 cu. ft. of methane may be recovered from it.

REFERENCES

(1) Nineteenth William Menelaws Memorial Lecture. Proc. South Wales Inst. Eng. LXVIII. March 1953. p. 6.
(2) Trans. Inst. Min. Eng. 109; 1119-1141; 111; 375-389.

MACHINERY AND EQUIPMENT

An Impressive Friction Drive Hoist

After a 36-day tour of inspection of mines in Western Europe, two members of the Ontario Mines Department Inspection Staff are reported satisfied with the factors of safety and operating economy inherent in the Koepe or friction drive hoist commonly used in Europe.

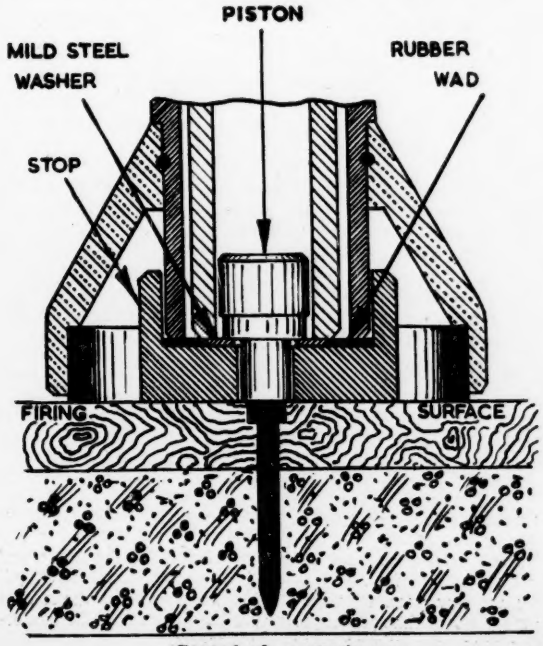
The two inspectors, who were sent by the Department to investigate safety factors in mine hoisting operations, report that the friction drive hoist, similar in operation to the lifts in office buildings, is in use in 95 per cent of the mines in the countries they visited. The majority of other mines not now using the hoist are in the process of converting existing machinery to this type of operation.

The Koepe hoist, unlike the type used in North America, works on a friction drive principle instead of having the cable wound on a large drum. In some cases three or four cables, each individually capable of supporting the entire load, are used as a precaution against the possibility of one cable snapping. The friction drive hoist which has been in use in Europe since 1877 has never been tried in North American mines. It is understood, however, that three are now on order for use in Michigan iron mines. During their tour the inspectors visited mines in Sweden, Germany, Holland, Belgium and France.

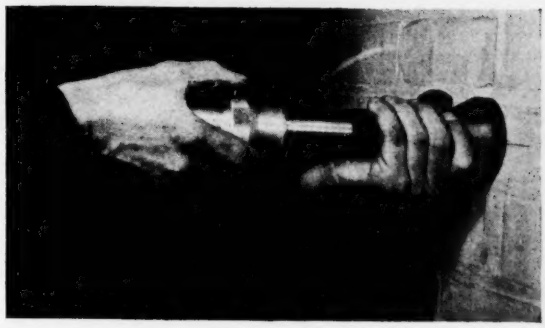
A British Power Driving Tool

A new power driving tool, manufactured by F. H. Bourner and Co. (Engineers) Ltd., is designed for the operation of nailing onto steel certain types of concrete, brickwork and similar materials. Named the Supa Dynamic Power Driving Tool, it thus has many possible applications within the mining industry, for the speedy and effective accomplishment of those duties of secondary support which normally may be envisaged in such areas as the shaft station and haulage road. The duties can be regarded as including the fitting of small plug supports for the securement of wiring of all types and the many similar uses which may be envisaged in an underground application.

The power pins utilized by the tool are normally provided in $\frac{3}{16}$ in., $\frac{1}{4}$ in. and $\frac{5}{16}$ in. in diameter of head and in a variety of lengths from $\frac{1}{2}$ in. to 4 in. Some types of pins are screwed Whitworth thread while others have butt heads, and the propellant is a .22 blank cartridge which is available in five strengths to control the degree of penetration of varying lengths of



Control of penetration



The firing position

power pins into differing hardnesses of metal. The manufacturers state that power pins may be driven at the rate of four per min.

The Supa Dynamic Power Driving Tool incorporates two methods of firing. These are first, the direct drive method and second, the piston method. The method of direct drive is employed for all purposes other than the control of penetration and crimping into steel. On these two occasions the piston method is utilized.

To control the depth of penetration into timber or soft materials, or to fix a female pin flush with the receiving surface, the pin is attached to the piston with a plastic cap. A cardboard washer is placed on the point of the pin to hold this central, and the assembly is inserted into the muzzle end of the barrel. The travel of the piston down the barrel is arrested by the stop fixed onto the end of the tool and thus the energy is taken from the pin. Provided a charge of sufficient strength is used, it is thus impossible to overdrive the pin. The crimping process is used when it is required to obtain a strong fixing into thin steel.

Certain features of the tool are presented as being unique. The $\frac{3}{16}$ in. Whitworth to $\frac{1}{4}$ in. Pipe power pins may be driven from the same tool, while crimping into steel gives a riveted effect. The equipment is British made throughout and weighs approximately 4 lb. The tool has been submitted to the Home Office, while H.M. Inspectors of Explosives advises that it is not considered as a firearm within the meaning of the Firearms Act and is, therefore, not subject to licence.

The estimated cost per shot varies from 5d. to 8d. inclusive of nail and cartridge, and thus it is seen that the tool represents a considerable saving in money, while in addition it makes for saving of time and minimizes employee fatigue.

Electronically Welded Industrial Clothing

The resistance to chemicals afforded by P.V.C. plastic sheet materials, together with their hard wearing qualities and lightness, makes them suitable for the manufacture of protective clothing for industry. To obtain the full advantage of the material, however, it must be fabricated by means other than stitching. This requirement is now claimed to have been achieved in the range of protective clothing manufactured by Plysu Products, Ltd., by the electronic welding of plastics.

The range now manufactured covers the majority of commercial needs for protective clothing, and embraces most standard garments.

The material adopted on these manufactures is specially compounded P.V.C. flexible sheet, which is unaffected by water, acids, alkalies and the majority of chemicals. In addition, it is put forward as being fire-resistant, permanently flexible and abrasion resisting. Comfort of the operative is regarded as an essential part of the problem of protection, and the maximum ventilation and minimum weight are a primary concern. Where corrosive vapour demands the mission of air vents, forced ventilation through the back of the garment is adopted.

No stitching is present in any garment manufactured by the company, as all seams are produced by H.F. welding. The company has developed its own H.F. welding equipment.

METALS, MINERALS AND ALLOYS

Leaders of both Houses in Congress have announced that they will try to end the present session about July 31, and go into recess until next January, but this is considered in some quarters optimistic and that the session may run well into August. No action to revise the Taft-Hartley Act is considered likely before the end of the session, unless the President should call a special session of Congress in the autumn. Among the measures which are to have priority in the Senate calendar is the extension of the Reciprocal Trade Agreements Act.

COPPER.—There is nothing substantially new to notice with regard to copper, the United States price being still called 29.75/30 c. both for domestic and imported material. The Chilean Minister of Finance reaffirmed this week that the Government stood by its previous decision regarding copper prices. United States buyers are in no hurry to cover their future requirements as yet.

The Copper Institute gives the May figures for the production of crude in the U.S. as 92,659 s.tons (95,890 in April); refined production was 117,929 s.tons (112,660 in April); domestic deliveries were 146,815 s.tons (142,282 in April); stocks of refined increased to 52,762 s.tons at the end of May (48,382 end April). Cutside the United States production of crude was 119,244 s.tons of primary metal (127,582 in April); output of refined was 97,235 s.tons (102,903 in April); deliveries were also lower at 61,082 s.tons (63,215 in April); stocks rose slightly to 147,234 s.tons at the end of May compared with 146,974 s.tons at the end of April. U.S. net imports of copper for the first four months of the year were 203,610 s.tons compared with 116,800 in the same period last year.

Increased production of copper in Austria should result from the conclusion of the expansion programme at the Bixlegg refinery in the Tyrol which now has a capacity of some 12,000 tons of metal yearly. Operations at the Mitterberg mine have been expanded to a potential output of some 10,000 tonnes.

LEAD was firmer this week; the London spot price closed yesterday at £91-£91½. There has been no advance in New York from last week's 13.5 c., but buyers are hesitant with the holiday season imminent. U.S. output to end of April was 121,882 s.tons, slightly below the monthly average of 1952. The fuming plant of the A.S. and R. at Selby went into commission on April 20. Production in India should be stimulated by the grant to the Metal Corporation of India of Rs.3,000,000 as a development loan. The company's present daily output of some 200 tons averages Pb 8 per cent, and Zn. 12 per cent.

TIN.—Prices improved somewhat from the low levels recorded towards the end of last week, but eased again later; there has also been some slight advance in the United States to 92.50 c. Otherwise there is not much to report this week.

Malayan output in May was 4,646 tons against 4,576 in April.

It is reported from Malaya that what is described as "the richest tin deposits" in Kongkoi Valley of Negri Sembilan are likely to be reopened before long. Sir Gerald Templer recently visited the area. The Valley was closed to mining some two years ago. Straits shipments in May are officially reported at 5,143 tons: 2,488 to the U.S., 870 to the U.K., 670 to Europe, 654 to British possessions, and 461 elsewhere.

Indonesian output in May was 3,048 tons making the five-month total 12,708 tons compared with 12,927 tons a year ago. It is reported from Djkarta that plans are being made to expand the Indonesian production, and no doubt the Government would like to see this accomplished.

Imports of concentrates into the U.K. in May were heavy at 8,333 tons. This was due almost entirely to the large arrivals from Bolivia which totalled 7,377 tons. Another attempted revolution there has been crushed by the government with many arrests, including that of the ringleader.

While the proceedings of the working party of the Tin Study Group in Brussels are officially entirely confidential, the opinion exists in the Belgian capital that the British delegation is favouring the creation of buffer stocks while the Belgians advocate restriction of output. These two points of view are not necessarily incompatible.

ZINC has firmed up on the London market, but there has been no advance in the U.S. quotation.

ALUMINIUM.—In pursuance of the Government policy of removing State controls wherever possible, the Minister of Materials stated in the House of Commons on Monday that the Government had decided to permit private trading in aluminium from the beginning of next month. The aluminium control order is to be revoked and licensing arrangements for private import of the metal are to be published shortly.

Under the new dispensation the metal will be offered to the industry instead of to the Ministry of Materials, but the Ministry undertakes to acquire any quantities not bought by industry until existing contracts expire at the end of 1955. Under agreements between the U.K. Government and Alcan, which has been supplying some four-fifths of U.K. needs in recent years, there was a firm contract for substantial supplies up to the end of 1955 and options for 15 years. The Ministry has found it possible to reduce the contract quantity somewhat and release more metal to the company for the needs of other customers. The optional quantities extending up to 1970 have been varied by an undertaking to buy up to 20,000 tons yearly of any metal left unsold within the option. The Ministry will transfer to the Company trading stocks valued at around £5,000,000 and there will also be a reduction in the contract price of ¾ c. per lb., or roughly £6 per ton, and the Company has undertaken not to exceed the price which the Ministry would have charged. Applications for licences should be made to the Board of Trade.

Kennecott Copper is reported to have approached the British Guiana Government for permission to explore the possibility of whether the Pomeroon district is capable of yielding commercial quantities of bauxite. Italy's bauxite output amounted last year to 281,400 tons against only 174,000 tons in 1951, and 153,400 tons in 1950. The 1938 output was 9,500 tons.

ASBESTOS.—The Philadelphia organ *Asbestos* reports that during April there was a remarkable pick up in both production and shipment of all grades of raw material and this continued during May. In a few cases where supply was appreciably in excess of demand the gap appears to be lessening.

MAGNESIUM.—Production in the United States is gradually tailing off in accordance with the government plans for closing some of the plants they operate. April output was 8,800 s.tons, and by July this should be reduced to around 6,000 s.tons monthly which is considered adequate for consumption and some stockpiling.

MANGANESE.—According to the American Iron and Steel Institute hopes are entertained of reducing U.S. dependence on manganese ore imports if a new process of recovering manganese from open hearth slag proves economical. The process is the outcome of co-operation between the Institute and the U.S. Bureau of Mines. Much of the manganese used in the production of steel goes into the slag. In the process now being tested in a pilot plant open hearth slag is treated, first in a blast furnace, and then in a basic converter.

The Central Provinces Manganese Ore Company has increased the rate of pay to its mine workers, numbering close on 20,000, together with an annual bonus of four months' basic wages, from the beginning of January last under an agreement between the mineworkers' union and the management.

QUICKSILVER.—Italian shipments in the first four months of the year totalled 372 tonnes against 328 tonnes in the same period of 1952. The United States price has been slightly lowered to $192/194 nom. per flask.

URANIUM.—In connection with the recent revolts in parts of East Germany, the *Sunday Times* representative in Berlin has reported that some 100,000 miners working the uraniferous area around Joachimsthall, were said to have struck and started systematically destroying the shafts and flooding the mines, and that some 65 shafts in the area had been destroyed. Naturally it has not been possible to get reliable information on the subject but for a long time past reports have been current of the intolerable conditions existing among the workers.

GOLD.—The Free Market price for gold is reported at $36.50-36.60 per. f.oz. The Colombian production in March was 35,223 f.oz. and the total for the first quarter 108,535 as compared with 121,469 f.oz. in the same period last year. The bulk of the output was from alluvial deposits. The South African output in May was 997,896 f.oz.; Transvaal 931,195, O.F.S. 25,924, miscellaneous 40,777. The United States' output in the first quarter of the year has been on an inceasing scale and amounted to 441,980 f.oz. but so far returns are below the average for the whole of last year.

PLATINUM.—The market in New York is said to be somewhat stronger with the leading supplier quoting $93 per oz. While industrial demand is fair, that of the jewellery trade is very light, despite the fact that buying for the Christmas trade usually begins to be in evidence after the turn of the year. A firmer tone therefore is believed to be due to government purchases reported up to $95 per oz.

Here there is no change to report.

DIAMONDS.—The Diamond Workers' Union in the Netherlands is requesting the Government to stop the export of rough goods as unemployment in the industry already exceeds 60 per cent and may, it is feared, increase. In South Africa many diamond cutters have also been laid off owing to the fall in the demand for diamonds.

Iron and Steel

Preparations are well advanced for the liquidation of State-owned steel assets and an announcement of "the appointed day" is momentarily expected. In the meantime the industry is making steady progress towards the conquest of the steel shortage and official assurances have been given that there will be "some increase" in supplies of steel plate to the ship building and ship repairing industry during the second half of the year. Through the medium of the Inter-Departmental Committee, which was recently appointed, improved deliveries have already been arranged for a number of consumers. This is the point where the shoe most pinches.

In other directions steel deliveries are on a better scale, but requirements are also very heavy and makers will enter the third quarter with an impressive weight of orders on their books. The export trade is still sluggish, owing to political uncertainties and exchange difficulties, but some relaxation of Australian import restrictions is foreshadowed, and there has recently been some brisk buying of sheets on American and Canadian account.

A new record in pig iron production was reached last month, but steel makers still emphasize the need for further expansion. With more pig iron and more scrap, ingot production could be raised to still higher levels and rolling capacity more fully employed. It is significant that foreign iron is still being imported on a substantial scale and home production is fully absorbed.

Trade in iron castings is quiet but there are a few indications which encourage hopes of an autumn revival. Improved deliveries of semi-finished steel from home sources also point to a progressive reduction in the imports of Continental supplies. Small bar re-rollers are almost exclusively dependent upon home orders, owing to the lower prices quoted by European makers. But export prices of Continental merchant bars have again been raised, and the price gap has been narrowed considerably.

The London Metal Market

(From Our Metal Exchange Correspondent)

Tin prices have shown some recovery early this week from the low levels reached recently. This recovery was, no doubt, partly caused by events in Korea and uncertainty as to the outcome of the truce negotiations, but by mid-week prices tended to sag again. The Eastern price on Thursday morning was equivalent to £705⅞ per ton c.i.f. Europe.

A statement by the Minister of Materials that the Government will not liquidate its stockpile of strategic raw materials at the end of the Korean war is important as far as metal markets are concerned, and it is thought that a considerable quantity of copper may be transferred from Government stocks to the stockpile, which would go a long way to smooth the change-over to private trading in this metal. Whether the Government is likely to take any action to replace the 20,000 tons of tin which went to the United States early last year is another matter, but such action would be very helpful to Malaya and the tin market in general.

There has been a fair demand for lead on the Continent, and high premiums have been paid in the U.K. for material for prompt delivery, whilst a backwardation between June settlement and forward metal continues at around £5 per ton and may even increase before the month is out.

Zinc has been a firmer market and a moderate demand has appeared for prompt metal, particularly high-grade, resulting in increased premiums being demanded for prompt metal. A small backwardation has also developed in this market.

Closing prices and turnovers for the week are given in the following table:—

	June 17		June 25	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£672½	£675	£665	£667½
Three months	£670	£672½	£665	£667½
Settlement	£672½		£665	
Week's turnover	775 tons		645 tons	
Lead				
Current month	£90½	£90¾	£91	£91¼
Three months	£85	£85¼	£87	£87½
Week's turnover	4,300 tons		5,525 tons	
Zinc				
Current month	£69⅞	£70	£71⅛	£72
Three months	£69⅝	£69⅞	£71⅛	£71⅜
Week's turnover	4,075 tons		3,575 tons	

JUNE 25 PRICES

COPPER

Electrolytic .. .. £252 0 0 d/d

TIN, LEAD AND ZINC

(See our London Metal Exchange report for Thursday's prices)

ANTIMONY

English (99%) delivered, 10 cwt. and over .. .. £225 per ton
Crude (70%) .. .. .. £210 per ton
Ore (60% basis) .. .. .. 20s. — 22s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) .. .. £483 per ton

OTHER METALS

Aluminium, £161 per ton
Bismuth (min. 4 cwt. lots) 17s. lb.
Cadmium (Empire), 13s. 10d./14s. 4d. lb.
Chromium, 6s. 5d./7s. 6d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £60 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%) £280/£295
Osmiridium, £40 oz. nom.
Osmium, £65/70 oz. nom.
Palladium, £7 15s./£8 10s. oz.
Platinum, £27/£33 5s.
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £70 5s./£70 10s. ex-warehouse
Selenium, 30s. 6d. nom. per lb.
Silver 74d. f oz. spot and f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 40% 6s. 9d. lb. c.i.f.
30% 5s. 6d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £14 18s. per ton c.i.f.
„ „ (concentrates) £14 18s. per ton c.i.f.
„ „ Refractory £14 10s. per ton c.i.f.
Baluchistan Metallurgical .. £16 11s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26 - £27 d/d
Magnesite, Raw .. .. .. £10 - £11 d/d
Molybdenite (85% basis) .. 103s. 10½d. per unit c.i.f.
Wolfram (65%) .. .. .. World buying 305s. - 315s.
„ „ .. .. .. 335s. Selling
Scheelite .. .. World buying 290s. - 300s.
„ .. .. 325s. Selling
Tungsten Metal Powder (for steel manufacture) .. .. 25s. 9d. nom. per lb. (home)
Ferro-tungsten .. .. .. 22s. 10d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £35 13s. 9d. d/d per ton
Ferro-manganese, home .. .. £49 15s. 0d. per ton
Manganese Ore U.K. (48%-50%) .. .. .. 6s. 1d. per unit
Brass Wire .. .. 2s. 6½d. per lb. basis
Brass Tubes, solid drawn .. 1s. 11d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The past week was rather a quiet and uninteresting one. Gilt-edged stocks were mainly easier on scattered selling. Latest revenue returns were not so satisfactory due to exceptional below the line expenditure. This is attributed to heavy borrowings under the Local Government Act. The overall position against the previous year is still much better and it is expected that the exceptional results of the past week may be ironed out later. The recent fall of two points in the imports price index has caused a further improvement in terms of trade for the United Kingdom.

Kaffirs started the week on a firmer basis. The June dividend results are now out of the way and the worst is known. In some cases the results were far from pleasant but in others not as bad as anticipated. Later in the week prices tended to fall off, mainly through lack of interest and renewed doubts over the labour supply position. This particularly affects the older mines. The South African budget is beginning to cloud the outlook. This year it has been delayed and is expected to be presented towards the end of July. It is possible that the growing uranium production may help matters here, but not immediately. Interest is centred on the coming June quarterly returns and hopes have been expressed that a gradual improvement in the overall position may become visible. Rose Deep hardened. The company recently passed a dividend but paid 1s a share capital return. Market hopes centre on continued capital repayment and possible return to the dividend list during the coming year. This view, however, should be regarded with caution. The result of the West Driefontein maiden dividend can be seen in the share prices. West Witwatersrand Areas, West Rand Investment Trust and Consolidated Goldfields all improve. The uranium producers came into demand and were the best feature in this market. Sub Nigel jumped following a substantial buying order rumoured to hinge on anticipated development results.

In the Orange Free State, Merriespruit eased. While developments were satisfactory, a large bull position was reported to be open prior to the announcement. The Loraine Reef strike in the No. 2 shaft disappointed market hopes and shares gave way. Average values of 21.2 dwt. over a width of 4.98 in., equivalent to 105 in. dwt., were obtained. It will be remembered that the No. 1 shaft gave average values of 350 in. dwt.

West African prices were sketchy and generally rather easier. A debate in the Gold Coast Parliament on independence and proposals for changes in the constitution is due shortly and is causing uncertainty.

West Australian shares were generally better in quiet trading conditions. Investors rather shy at this market in view of the unhappy position during the past few years.

In the Indian goldfield, the power cuts in the Kolar area ended following heavy rains. The Ooregum mine will definitely close down but the proposal to transfer the lease to Champion Reef has not yet been passed by the Mysore Government.

Coppers were generally better. Nchanga hardened following last week's preliminary profit figures and Roan Antelope and Rhodesian Selection Trust were also in demand anticipating their emigration next week.

Tin shares were rather uninteresting, but Bangrin and Siamese Tin closed below best. A merger is proposed. Siamese intend to buy the balance of Bangrin shares and market rumours suggest a basis of five for six plus a cash payment; the exact figures are not yet known.

Rich tin deposits in the Konghoi Valley, in Negri Sembilan State, may be re-opened. The area, formerly closed on account of guerrilla activities, is now reported to be safe. In the Nigerian section there was little change but Beralts were volatile and recorded a sharp rise.

Among miscellaneous base metals, Murchison again fell sharply on the large cut in the dividend announced last week. It is reported that the selling of antimony to-day is difficult.

Canadian issues were much better. Wall Street was stronger on Korean imponderables and the Canadian dollar has recently been harder among world currencies.

FINANCE	Price June 24	+ or — on week
African & European	2½	+1/32
Anglo American Corpn.	5⅞	—1/16
Anglo-French	17/6	.....
Anglo Transvaal Consol.	23/9	.....
Central Mining (£1 shrs.)	28/1½	—7½d
Consolidated Goldfields	45/6	+1/6
Consol. Mines Selection	23/9	.....
East Rand Consols	2/10½	.....
General Mining	3⅞	+1/16
H.E. Prop.	39/4½	—7½d
Henderson's Transvaal	8/-	+3d
Johnnies	53/-	—2/-
Rand Mines	3¼	.....
Rand Selection	30/7½	—7½d
Strathmore Consol.	34/6	+3d
Union Corp. (2/6 units)	26/6	—3d
Vereeniging Estates	4	.....
Writs	32/9	+3d
West Wits	45/7½	.....
RAND GOLD	—	
Blyvoors	40/9	.....
Brakpan	10/6	+6d
City Deep	17/9	+3d
Consol. Main Reef	21/3	+7½d
Crown	33/9	+1/3
Daggas	3⅜	+1/32
Doornfontein	24/9	.....
Durban Deep	18/9	+7½d
E. Daggas	16/6	+3d
E. Geduld (4/- units)	33/1½	.....
E. Rand Props	2 19/32	—1/32
Geduld	4½	.....
Govt. Areas	14/-	+3d
Grootvlei	23/-	+9d
Libanon	10/-	—3d
Luipaards Vlei	24/9	+1/-
Marievale	21/-	+3d
Modderfontein East	18/9	.....
New Kleinfontein	21/10½	.....
New Pioneer	19/9	—3d
Randfontein	42/3	+3d
Robinson Deep	10/9	+3d
Rose Deep	14/4½	+1/3
Simmer & Jack	5/-	+3d
S.A. Lands	23/9	.....
Springs	4/9	.....
Stilfontein	27/6	.....
Sub Nigel	2 1/16	+1/8
Van Dyk	6/3	+3d
Venterspost	13/3	—3d
Vlakfontein	14/-	.....
Vogelstruisbult	34/-	+3d
West Driefontein	6 13/16	.....
W. Rand Consolidated	53/9	+1/3
Western Reefs	48/1½	+7½d

O.F.S.	Price June 24	+ or — on week
Freddies	10/3	—1¼d
Freddies N.	10/-	—4½d
Freddies S.	9/10½	—3d
F. S. Geduld	2⅜	.....
Geoffries	15/-	—6d
Harmony	24/9	.....
Loraine	9/-	—3d
Lydenburg Estates	12/6	.....
Merriespruit	8/3	.....
Middle Wits	16/-	—1½d
Ofsits	36/10½	—7½d
President Brand	25/9	—3d
President Steyn	21/-	—9d
St. Helena	13/6	.....
Virginia Ord.	14/-	+3d
Welkom	20/6	—3d
Western Holdings	3¾	+1/16
WEST AFRICAN GOLD		
Amalgamated Banket	1/6	.....
Ariston	6/3	+1¼d
Ashanti	20/6	—6d
Bibiani	6/-	.....
Bremang	2/4½	—1½d
G.C. Main Reef	3/3	—1½d
G.C. Selection Trust	6/4½	.....
Konongo	2/6	—1½d
Lyndhurst Deep	1/-	.....
Marlu	1/3	.....
Taquah & Abosso	3/1½	—1½d
AUSTRALIAN GOLD		
Boulder Perseverance	2/4½	.....
Gold Mines of Kalgoorlie	11/3	+3d
Great Boulder Prop.	9/6	+6d
Lake View and Star	15/1½	—1½d
Mount Morgan	17/4½	+1½d
North Kalgurli	13/-	—1½d
Sons of Gwalia	6/9	+3d
South Kalgurli	7/9	—1½d
Western Mining	12/-	.....
MISCELLANEOUS GOLD		
Cam and Motor	9/6	.....
Champion Reef	4/10½	—1½d
Falcon Mines	6/6	—6d
Globe & Phoenix	26/-	+1/6
G.F. Rhodesian	4/10½	.....
London & Rhodesian	4/3	—1½d
Motapa	2/1½	—3d
Mysore	2/10½	.....
Nundydroog	5/9	.....
Ooregum	2/10½	+1½d
Oroville	10/-	.....

MISCELLANEOUS GOLD (contd.)	Price June 24	+ or — on week
St. John d'El Rey	21/10½	.....
Zams	25/6	+3d
DIAMONDS & PLATINUM		
Anglo American Inv.	3⅞	+1/16
Casts	17/9	.....
Cons. Diam. of S.W.A.	4½	.....
De Beers Defd. Bearer	62/-	+1/9
De Beers Pfd. Bearer	15½	+⅛
Pots Platinum	8/-	+3d
Watervaal	14/-	.....
COPPER		
Chartered	50/3	—3d
Esperanza	3/9	.....
Indian Copper	4/3	.....
Messina	3 7/8	+1/16
Nchanga	6 ⅛	+⅛
Rhod. Anglo-American	47/9	+1/3
Rhod. Katanga	9/3	.....
Rhodesian Selection	13/9	+4½d
Rhokana	18	+⅛
Rio Tinto	19	.....
Roan Antelope	13.1½	+6d
Selection Trust	29/9	+3d
Tanks	55/6	+6d
Tharsis Sulphur Br.	41/3	.....
TIN (Eastern)		
Ayer Hitam	22/-xd	+3d
Bangrin	8/10½xd	+2/-
Gopeng	7/6	.....
Hongkong	6/-	—3d
Ipoh	13/9	—7½d
Kamunting	8/6	—1½d
Kepong Dredging	4/9xd	.....
Kinta Tin Mines	9/9xd	.....
Malayan Dredging	23/9	.....
Pahang	13/-	.....
Pengkalen	7/-xd	.....
Petaling	10/4½	.....
Rambutan	11/-	.....
Siamese Tin	22/-xd	+1/-
Southern Kinta	13/9	+4½d
S. Malayan	23/3	.....
S. Tronoh	7/7½	+1½d
Sungei Kinta	13/1½	.....
Tekka Taiping	4/9	—3d
Tronoh	21/3xd	+7½d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	9/1½	—1½d
Beralt Tin	27/3	+2/-
Bisichi	4/1½	—1½d
British Tin Inv.	12/3	.....
Ex-Lands Nigeria	3/9	—1½d

TIN (Nigerian and Miscellaneous) contd.	Price June 24	+ or — on week
Geevor Tin	10/-	.....
Gold & Base Metal	3/4½xd	—1½d
Jantar Nigeria	14/3	.....
Jos Tin Area	12/-	.....
Kaduna Prospectors	2/9	+6d
Kaduna Syndicate	2/6	+3d
London Tin	4/7½	—1½d
United Tin	2/3	.....
SILVER, LEAD, ZINC		
Broken Hill South	41/3	+1/3
Burma Mines	1/6	.....
Consol. Zinc	22/3	—3d
Lake George	9/6	+9d
Mount Isa	31/3xd	+3d
New Broken Hill	18/-	+3d
North Broken Hill	52/6	+2/6
Rhodesian Broken Hill	10/10½	+3d
San Francisco Mines	19/-xd	—3d
Uruwira	3/1½	.....
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	45/6	.....
Associated Manganese	46/9	+2/-
Cape Asbestos	20/3	+3d
C.P. Manganese	50/-	.....
Consol. Murchison	23/-	—2/-
Mashaba	6d	.....
Natal Navigation	3	—1/16
Rhod. Monteleo	7/6	.....
Turner & Newall	51/9	+9d
Wankie	13/3	—6d
Witbank Colliery	3 1/16	.....
CANADIAN MINES		
Dome	$31½	.....
Hollinger	$24½	+½
Hudson Bay Mining	$80	+5
International Nickel	$71½	+1½
Mining Corpn. of Canada	£4 3/4	.....
Noranda	$116	+2
Quemont	£6¼	+¼
Yukon	4/1½	.....
OIL		
Anglo-Iranian	6	+¼
Apex	38/1½	—7½d
Attock	29/4½	+2/4½
Burmah	43/9	+1/3
Canadian Eagle	28/3	+3d
Mexican Eagle	21/3	.....
Shell (bearer)	4 3/8	.....
Trinidad Leasehold	24/-	.....
T.P.D.	20/-	.....
Ultramar	21/3	+3d

COMPANY NEWS AND VIEWS

Union Minière in 1952

The Union Minière du Haut Katanga has issued its annual report this week, of which the following are some of the more interesting features.

During 1952 the company produced 205,749 tonnes of copper (compared with 191,959 in 1951), 6,831 tonnes cobalt (5,715), 189,388 tonnes zinc concentrates (153,966), 20,506 kg. cadmium (24,316), as well as an undisclosed quantity of uranium ores. The treatment of these outputs in Belgium by the Societé Générale Métallurgique de Hoboken yielded 147,034 kg. silver (118,046), together with 54 kg. of gold (15), and small quantities of palladium and platinum.

During 1952 Union Minière carried out research into the recovery of metals from the flue dusts of its Lubumbashi smelters.

The company's three hydro-electric power stations, of which only two are as yet in full production, will eventually be able to produce about 1,100,000,000 kWh. per annum. As, however, it is anticipated that this capacity will be insufficient for future requirements Union Minière has commenced construction of a fourth power station planned to have an annual output of about 1,400,000,000 kWh. The first unit of this new station is expected to be in production early in 1957.

New capital expenditure during the year under review amounted to Frs.C.1,679,972,741. The importance of this item can be gauged from the fact that the total capital expenditure incurred since the formation of the company now amounts to Frs.C.11,265,439,341, of which approximately 50 per cent has already been amortised. The issued capital of the company amounts to Frs.C.5,000,000,000 made up of 1,242,000 shares, which have no par value. Total reserves stand at Frs.C.1,026,537,991.

After providing for taxation and amortisation there is a net profit available for distribution on last year's accounts amounting to Frs.C.3,168,512,510. From this, net dividends have been declared totalling Frs.C.1,250 per share, of which Frs.C.600 have already been paid while the balance of Frs.C.650 will be paid on July 3.

Output from Siamese and Bangrin in 1952

In recent issues we have already given the profit, tax and dividend figures for 1952 for Siamese Tin and Bangrin (*Mining Journal*, June 5, p. 678) and have also given particulars for the proposed merger of the two companies which comes up for consideration at an extraordinary general meeting called for July 9 (*Mining Journal*, June 19, p. 743). The following additional information regarding the operation of these two companies during 1952, which space precluded our publishing last week, are summarized in the following table:—

	Siamese		*Bangrin*	
	1951	*1952*	*1951*	*1952*
Dredged (000 cu. yd.) ...	7,469	8,872	3,423	2,245
Yield (lb./cu. yd.) ...	0.47	0.46	0.72	0.68
Output (tons ore) ...	1,564	1,833	1,098	681
	£	£	£	£
Price received per ton ore	721	675	710	675
Export Duty per ton ore	103	93	108	90
Tin Ore Sales* (000) ...	1,171	1,256	804	464
Mining Costs (000) ...	681	701	392	231

* Before deduction of export duty.

The substantially increased output achieved by Siamese Tin was due mainly to the return to operation of the Kota Bahru dredge on the company's Malayan property in February 1952, and an increased production from the Huey Moot dredge which during the year was once again working on virgin ground. The No. 1 dredge on the other hand, at last ceased work on the Ngow property in November last, and is now laid up.

Output by Bangrin, on the other hand, was disappointing after the high outputs of the two previous years, due largely to the fact that during five months of the year, only one dredge was working out of three. The No. 3 dredge was out of service for hull repairs from March to August and the No. 2 dredge has been removed entirely from the company's property in Siam and transferred to the Chemor property in North Kinta, Malaya, where it had been intended that it should operate as a joint venture with Siamese Tin who own the property.

Unfortunately, in excavating the erection dock at Chemor, limestone bottom, undisclosed by original test drilling, was encountered and all the work on the dredge has been suspended pending further check-bores which have so far not been encouraging. As however Chemor is in one of the worst bandit areas, all work is at present subject to a considerable element of risk and uncertainty.

At Wanlockhead, in Scotland, progress is reported at the Lowland Lead Mines now jointly operated by Siamese and Bangrin and the Rio Tinto Company under the management of the last named. During the year geological reconnaissance was advanced both above and below ground and by the year end good progress had been made with plans for unwatering the mines, work on which may commence by the middle of this year.

Chairman of both companies is Mr. K. O. Hunter. Annual meetings are on July 9.

Tanjong Pays Less

Operations in 1952 were less favourable than in the preceding outstandingly satisfactory year, which had benefited alike from the high tin price and from a full year's working of the additional dredge acquired in the amalgamation with Sungei Luas Tin Dredging Company. In the year under review the profit after tax was down by nearly £100,000 at £139,180, while dividends totalling 80 per cent have been paid in respect of the year compared with 100 per cent in 1951. As will be seen from the accompanying tables, both the area dredged and the yield per cu. yd. decreased slightly last year. At the same time, costs increased by nearly 2d. per cu. yd. while the average price received for concentrates was down by over £40.

Year to Dec. 31	*Cu. Yd. Dredged* (000)	*Per Cubic Yard Yield* (*lb.*)	*Cost* (*pence*)	*Output* (*tons*)	*Price Rec.* (*per ton*) £ s. d.
1951	4,397	0.59	8.7	1,154	632 11 5
1952	4,206	0.52	10.5	981	590 5 6

After providing £78,050 to meet dividend payments, £25,000 was transferred to general reserve (compared with £100,000), while £23,241 were written off the rehabilitation account leaving a carry forward of £54,841 (£42,847). The transfer to rehabilitation account represents part of a tidying up operation following notification towards the end of last year of the War Damage Commission's award, which has enabled the company to clear off all outstanding loans from the Malayan Government. At the same time, the rehabilitation suspense account on the opposite side of the balance sheet has been closed, the balance of £23,241 charged to the appropriate account, representing the excess of rehabilitation expenditure over the war damage award.

Year to Dec. 31	*Ore Sales**	*Mining Costs*	*Tax*	*Net Profit*	*Dividend*	*Carry Forward*
	£	£	£	£	%	£
1951	730,261	162,479	306,859	235,931	100	42,857
1952	577,746	184,515	236,650	139,180	80	54,821

* Less tin duty and charges.

Shareholders will probably be less concerned with the results for 1952 which clearly remained good than they will with the prospects for the current year, which, in common with those of all tin producers, must be clouded by the substantial fall in tin price which developed in April. In addition to this, outputs during the first five months of the current year are considerably down on the corresponding period of 1952 at 284 tons compared with 502 tons, due to the fact that in recent months Dredge No. 2 has been working through tailings left from a period of war-time operation by the Japanese while for some time to come it will be working in an area of which a substantial portion has already been dredged down to about 60 ft. by Dredge No. 1. Future production from Dredge No. 2 is consequently somewhat difficult to estimate as, although

good values remain in the ground below 60 ft., output will vary according to the proportion of virgin ground treated and in any event must remain on a lower level than during the past two years. All in all, it seems inevitable that revenue will show a marked decrease this year while costs must inevitably remain relatively inelastic.

Mr. A. G. Glenister is chairman. The meeting will be on July 9.

Kinta Treats More Ground for Lower Yield

Kinta Tin Mines, which had been compelled to restrict operations in 1951 due to an exceptionally dry spell which hampered the operation of the mine's hydraulic equipment, was able last year to treat nearly as much ground as in the record year of 1950 when 1,209,000 cu. yd. were treated for a yield of 402 tons of tin. Owing, however, to substantial lowering of the grade of ground worked at the Damak section, output last year showed a decrease over both previous years although costs per cu. yd. were down by 2d. over 1951 at 14s. 8d. as a result of the larger yardage treated. Output for the first five months of the current year is substantially unchanged over the same period a year ago at 116 tons.

Year to Dec. 31	*Cu. Yd. Treated* (000)	*Per Cubic Yard Yield* (*lb.*)	*Cost* (*pence*)	*Output* (*tons*)	*Price Rec'd* (*per ton*) £ s. d.
1951	855	1.00	17.1	381	629 2 10
1952	1,106	0.61	14.8	304	572 7 2

As in the case of Tanjong, the announcement of the War Damage Commission's award provided the opportunity for removing from the balance sheet the item of rehabilitation loans from the Malayan Government which had previously stood at £37,220 and at the same time the sum of £19,578 has been written off to clear the company's rehabilitation suspense account in so far as its mining property is concerned. At the same time a further £10,000 has been written off in respect of the company's Sanglop Rubber Estate leaving a balance of £2,434 in anticipation of only a very small award being made against the war damage claim on this property.

Year to Dec. 31	*Ore Sales** £	*Mining Costs* £	*Tax* £	*Net Profit* £	*Dividend* %	*Carry Forward* £
1951	240,514	62,397	140,070	78,583	75	24,726
1952	174,771	68,952	70,901	60,720	40	13,954

* Less tin duty and charges.

Kinta Tin Mines, in common both with Tanjong and all other Malayan tin producers, is carrying a terrific load of taxation to which E.P.L. has now also begun to contribute. Some indication of the full extent of this burden can be gathered from the fact that last year Kinta was paying an average of £341 per ton of tin produced in tax and Government Royalties, while only £115 per ton was being put to reserve and £83 paid by way of dividend.

Mr. A. G. Glenister is chairman. The meeting will be on July 9.

Company Shorts

"Johnnies'" Half Yearly Dividends. The Kaffir half yearly dividend season was completed last Friday with the announcement of the payments of the Johannesburg Consolidated group. Those of the other groups appeared in our last week's issue. The J.C.I. payments are unchanged from six months ago except for East Champ d'Or which has reduced its distribution to 2d. The following are the comparative figures over the past two years:

Company	*Dec. (1951)* s. d.	*June (1952)* s. d.	*Dec. (1952)* s. d.	*June (1953)* s. d.
E. Champ d'Or ..	4½	3¾	3¼	2
Govt. Areas ..	1 0	1 0	1 0	1 0
N. State Areas ..	7½	4½	3	3
Randfontein ..	1 0	9	1 0	1 0
Wit. Gold	Nil	Nil	Nil	Nil

Middle Wit. Borehole Strikes Vaal Reef.—Middle Witwatersrand (Western Areas) reports the intersection of the Vaal reef in borehole T.L. 40 at a depth 7,065 ft. Core recovery was almost complete and assayed 89.65 dwt. over a corrected width of 4.7 in., equivalent to 421 in. dwt. A deflection is being drilled. This borehole is situated in the area of the Kerksdorp Townlands at approximately 2,600 ft. east of borehole T.L. 36 which, as previously reported, struck the Vaal reef at 6,128 ft. with a core recovery of 106 in. dwt.

Natal Navigation Earns More.—The Natal Navigation Collieries and Estate Company have announced a final dividend of 10 per cent, plus a bonus of 5 per cent for the year ending June 30, 1953, making a total of 25 per cent per £1 share for the year. The dividend and bonus are payable on August 14 next to shareholders registered on June 30.

The preliminary estimated group consolidated figures for the year showed that group profit, after all charges including taxation, rose to £291,450 against £280,400 in the preceding year.

H. E. Prop. Pays Same.—H. E. Proprietary have announced the recommendation of a final dividend of 2s. 6d. per share making a total of 30 per cent for the year ended December 31, 1952, the same as was paid in 1951. The net profit for the year was £66,921 compared with £63,879 in 1951.

Rhodesian Selection Trust Companies on the Move.—The Selection Trust group of copper companies officially transfer their head offices to Lusaka on July 1 next. Those who have been following Mr. R. L. Prain's recent observations on problems surrounding the question of native labour will not be surprised to learn that to mark this occasion the group has endowed a Rhodes Chair of Race Relations at Oxford.

As a result of the transfer of the three companies concerned —Mufulira, Rhodesian Selection Trust and Roan Antelope— the following directors will be resigning from the Boards at the end of this month:—*From all three companies*: Mr. C. W. Boise, Sir Dougal O. Malcolm and Brigadier R. Micklem. *From Roan Antelope*: Mr. J. E. W. Lomas and Mr. C. F. S. Taylor. *From Mufulira*: Mr. E. C. Bearing, Mr. J. N. Buchanan, Mr. D. P. C. Neave and Mr. A. Comar Wilson.

Further appointments to the Boards of all three companies will be announced from Lusaka next month.

Roan Antelope and Mufulira Call Special Loan Stockholders' Meeting.—In connection with the plans for the Rhodesia Congo Border Power Company, announced elsewhere in this issue (page 764), the approval of the 4½ per cent Loan Stockholders of the Roan Antelope and Mufulira Copper Mines is required to empower the companies both to guarantee their share of the repayment of the £8,000,000 loan from the Export-Import Bank of Washington, and to make unsecured borrowings from the Rhodesia Congo Border Power Company in connection with the development of the companies' power plants. A meeting for this purpose will be held in London at Selection Trust Building at 11.30 on July 6.

Mawchi Mines May Soon Be Liberated.—According to a dispatch from Reuters, Burmese army sources have stated that the rebel-held British-owned wolfram mines at Mawchi are soon expected to fall into Government hands. This dispatch, dated June 12, recalls earlier information released in January last that the Burmese army had opened an offensive to free the Mawchi wolfram mines. Before the war Mawchi produced about 10 per cent of the world's demand and 35 per cent of the British Commonwealth's demand. The average annual pre-war production was between 5,000-6,000 tons.

Gopeng Earns Less.—Accounts to September 30 last reveal that Gopeng Consolidated earned a profit before tax of £408,328 compared with £474,905 in the preceding year. Dividend payments total 50 per cent as against 60 per cent previously. The report and accounts will be dealt with here more fully next week. The meeting will be on July 15 at Redruth.

The Kadunas' Accounts.—The accounts for 1952 for Kaduna Prospectors and Kaduna Syndicate will be dealt with next week. Prospectors' net profit, after tax, was £3,678 (£5,481) and for the Syndicate was £20,521 (£24,782). Both companies are paying dividends on a reduced capital, the rate being unchanged at 33 per cent for Prospectors and increased to 75 per cent from 50 per cent for the Syndicate. Meetings are on July 7.

Mr. C. F. S. Taylor has been appointed to the board of The Anglo Metal Company as joint managing director, with effect as of July 1.

Mr. J. Roy Gordon has been elected vice-president and general manager of Canadian operations of the International Nickel Company of Canada, in succession to the late **R. Leslie Beattie.**

Mr. N. W. S. Lewin has been appointed a director of East Daggafontein Mines in place of **Mr. G. V. R. Richdale,** who has resigned. **Mr. T. Reekie** has been appointed alternate to Mr. Lewin.

Mr. Clifford Waite has been appointed chairman of Consolidated Tin Smelters in succession to **Mr. Ernest V. Pearce** who has relinquished the chairmanship. Mr. Pearce will, however, retain his seat on the board.

Mr. S. H. Smith has been appointed chairman of British Tin Investment Corporation in succession to **Mr. Ernest V. Pearce** who has relinquished the chairmanship. Mr. Pearce will retain his seat on the board.

The death occurred recently of **Mr. Charles Samuel Beale,** who was until recently chairman and managing director of Paringa Mining and Exploration Company and was also a former chairman of Mount Charlotte (Kalgoorlie) Gold Mines.

DIVIDENDS

Apex (Trinidad) Oilfields 10% *i* (July 23)
British Tyre and Rubber Co. 7½% *i* (July 18)
Bisichi Tin 25% (July 22)
Berjuntar Tin Dredging 3s. *i* (July 22)
Fresnillo Company 16.70 c. (July 17)
Idris Hydraulic Tin 5% (July 10)
Kramat Tin Dredging 20% (July 29)
Lahat Mines 15% (July 3)
Lower Perak Tin Dredging 1s. (July 15)
Lydenburg Platinum 6¼% (August 7)
Mountain Copper 33¼% (August 8)
Nchanga Consolidated Copper 50%
Rand Leases 3¾% (August 8)
Rawang Tinfields 12½% (August 12)
Rooiberg Minerals Development 37½% (August 8)
Sungei Besi Mines 9.6d. (July 13)
Sungei Kinta Tin 1s. (August 12)
Tanjong Tin Dredging 12½% *i* (June 30)
Taiping Consolidated 20 c. (July 28)
Union and Rhodesian Mining and Finance 6¼% *i* (July 1)
Vereeniging Brick and Tile 7½% *i* (August 15)
Vereeniging Estates 10% *i* (August 15)
Venterspost Gold 4¼% (August 7)
Village Main Reef 12% (June 30)
Vlakfontein Gold 5 5/12% (August 7)
Vogelstruisbult Gold 11¼% (August 7)

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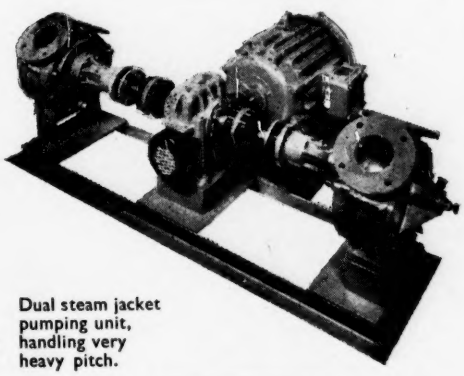

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BANK OF BRITISH WEST AFRICA LIMITED

The 59th Annual General Meeting of the Bank of British West Africa Ltd., will be held at the office of the Company, 37 Gracechurch Street, London, E.C.3, on Tuesday, July 14 next.

The following is the Statement by the Chairman, **The Rt. Hon. Lord Harlech, K.G., G.C.M.G.,** which was circulated with the Report and Accounts for the year ended March 31, 1953:—

The composition of your Board of Directors has remained unchanged since the Annual General Meeting a year ago.

Our congratulations are extended to Mr. Robert de Zouche Hall, C.M.G., who on leaving Tanganyika, will shortly proceed to the Gambia, to take office as Governor and Commander-in-Chief.

We offer our good wishes to Mr. S. J. Andrews, who relinquished his post in February 1953, on reaching retirement age. He was in the service of the Bank for thirty-two years, during the last seven of which he held the appointment of Company Secretary. I trust that he will have many years in which to enjoy his well-earned leisure. Mr. E. J. D. Kewley has been appointed as his successor, and in him the Bank possesses a conscientious officer, whose keenness and sense of duty well fit him for his new office.

It is with regret that I record the death in December last of Mr. J. W. Blakey, late Manager of our Liverpool Office, who has been in our service for over forty-two years. His helpful advice and friendly manner will be greatly missed, not only by his colleagues, but throughout a large circle of friends in Liverpool. Mr. W. H. Townley has been selected to take his place, and is well suited to the responsibilities of this important Branch.

During the year Mr. John C. Read, formerly of the Midland Bank Ltd., who joined our Bank in 1952 as an Assistant General Manager, made an extensive tour of Nigeria. In addition to visiting all our Branches there, he travelled widely throughout areas likely to be of interest to our business, and obtained much information in regard to commercial activity and current developments, while at the same time making personal contact with both our European and African staff and with many customers.

It has always been our objective to impress on the public that those who use our Bank's services should feel that we take a direct interest in their financial problems, and I have good reason to believe that Mr. Read's visit has done a great deal to foster existing good relationships as well as develop new ones.

Mr. Read hopes to visit the Gold Coast, Sierra Leone and the Gambia later in the current year.

The numerical strength of our staff has grown considerably during recent years: we now have a total of 1,107 in the service, compared with 461 at the end of the war in 1945. The present strength is represented by 428 Europeans and 679 Africans, and in both instances includes many youthful entrants, who are receiving careful training to prepare them for progressively higher posts when opportunities arise. This particularly applies to the younger generation of Africans, many of whom will be called upon to assume more important duties than their predecessors.

You will, I am sure, be pleased to join with your Directors in an expression of thanks to all members of the staff in the United Kingdom and Overseas for the good services they have rendered throughout the year. Although it is usual for us to record our appreciation of their efforts in this way, I should like each member to realize that it is not merely a routine procedure, but that it represents a tribute to each individual for duties loyally and efficiently performed, often under arduous conditions.

The Balance Sheet and Profit and Loss Account are before you, and the results are clearly a matter for satisfaction. The figures indicate a general expansion of business, and represent a partial fulfilment of our aim to keep abreast of the many economic developments taking place in West Africa.

Capital remains unchanged at £1,200,000.

A sum of £50,000 has been taken from profits and added to Reserve Fund, raising the total to £1,100,000. A further sum of £125,000, also taken from profits, has been placed to Contingencies Account.

Current, Deposit and other Accounts at £58,773,777 are higher by £4,206,800, compared with last year.

Liabilities on Acceptances, Confirmed Credits and other Engagements on behalf of customers at £7,630,591 are down by £1,717,985, and give an indication of a more cautious policy being followed by trading companies, many of whom have made serious endeavours to reduce their stocks during the year. When this situation has been corrected, we may confidently look for a revival of business under Credits; meanwhile a healthier aspect in relation to stocks on hand is apparent.

On the Assets Side, our cash holdings at £6,766,164 are down by £1,046,781, while money at Call and at Short Notice is higher by £4,760,714. At first sight these figures may perhaps suggest an over-liquid position, but the necessity for having ample funds at our disposal to finance the requirements of seasonal crops in West Africa is of paramount importance, and experience shows that practically the whole of our available funds are fully engaged during marketing periods.

Loans, Advances and other Accounts at £12,295,375 are lower by £2,328,927 and reveal a downward tendency in the flow of facilities required for the renewal of trading stocks. This trend is a normal one in a period when a heavy clearance of accumulated merchandise is taking place.

Your Directors have given careful consideration to the payment of a dividend in a year that has shown a higher profit ratio, which it is felt may justify optimism to the extent of proposing an increased distribution. I, therefore, have pleasure in recommending the payment of a Final Dividend at the rate of 7 per cent, which with the Interim Dividend of 3 per cent paid in November 1952, will make a total of 10 per cent for the full year.

I think you will know that our dividend policy has always been elastic and in this respect it differs from that of most of the larger English Banks. In good trading years we have felt justified in proposing a higher distribution, while in periods of recession it has been necessary to adopt a conservative attitude. It gives me pleasure to make the present recommendation, and I might add that this is the third occasion in the history of the Bank that 10 per cent has been paid, the previous instances being in the prosperous years of 1908 and 1920.

At our Meeting a year ago, I gave a forecast of probable expansion in our network of overseas Branches, with an indication that further new offices were being contemplated. New Branches have been opened at Hohoe, Sunyani, Tudu (Accra), and Keta on the Gold Coast and at Aba, Ilesha, Sokoto, Warri and Apapa in Nigeria. Attention is being paid to other areas where new developments are taking place.

We have an extensive building programme on hand, in relation to newly-established Branches, the modernizing of existing offices, and the provision of additional residential accommodation for our staff. Although steady progress is being made, it will be several years before the schemes now under way are completed. The reconstruction of our principal office at Lagos, a major operation in itself, has been long drawn out. However, there are real hopes of it being finished within the next twelve months.

West Africa contributes a variety of products to world markets from her agricultural and mineral wealth. Although there is a tendency towards lower prices, the tonnage output of most of these products is well maintained, with the possible exception of timber and rubber, which are meeting fierce competition from other sources of supply.

With its varied range of exportable commodities, West Africa is able to insulate itself to some extent against possible recessions, as experience shows that slump conditions rarely involve more than one or two products at a time. Few tropical countries of such size have so much to offer, and West Africa is fortunate in being able to export extensive quantities of cocoa, groundnuts, palm oil, palm kernels, cotton, timber, gold, manganese, tin concentrates, iron ore, rubber, hides and skins, etc., the demand for which continues to be favourable.

A considerable change has taken place in the level of stocks of consumer goods in the hands of merchants since I alluded to this problem a year ago. Outward shipments to West Africa have been curtailed, and this, coupled with a successful period of retail selling, has resulted in a reduction of surplus stocks to a wiser level. This process has entailed some price cutting, but there have been few instances of panic sales, although reduction of profits has been frequent. Price adjustments in relation to existing stocks of consumer goods are now almost over, and a further writing down should not be necessary.

The most urgent need of these colonies at the present time are in respect of nearly all types of building materials and more skilled technicians for the development of their resources. It is clear that West Africans are far-seeing people where the future of their country is concerned and there exists ample evidence that they are increasingly prepared to take a long-term view of the tasks that lie ahead of them. The real value of labour-saving machinery is beginning to be understood, and while there is no general move towards mechanization so far, sufficient inquiries are being made to suggest that manual labour may in time be lightened by improved mechanical devices and more modern plants.

I now turn to the four individual territories of West Africa:

NIGERIA

The importance of agricultural development in Nigeria is not disputed, and the need for skilled scientific research, both fundamental and applied, is recognized by the Ministers of the new Government. Valauble development work is being undertaken by Regional Authorities, particularly in mechanization, group farming, and the extensive use of artificial fertilizers.

The country has always met with fair success in attaining its object of producing a more adequate food supply for home consumption, as well as a variety of crops for export, and it is anticipated that the progressive application of more scientific methods will in time result in an increased output of both.

The newly formed Forest Research Branch at Ibadan is at work on silviculture and forest botany, from which great benefits will be derived in future years.

While the agricultural aspect of the country's natural wealth must come first, there exists a declared policy of encouraging a degree of industrialization and of increasing the participation of Nigerians in some of the less highly technical industries. The setting up of factories is fostered, particularly where machinery can be introduced for the treatment of Nigerian products intended for export.

In the past few years considerable development funds have been expended on industrial purposes and although advantages may accrue, Nigeria is still essentially a primary producer and her principal wealth lies in and under the soil.

The Marketing Boards continue to occupy a dominant position in relation to exports. During the past season the Boards have maintained the high prices paid for the previous year's crops of cocoa, cotton, groundnuts and oil seeds, and their system of price fixing bears good testimony to their functions as a stabilizing medium. Nigeria's economy as a whole benefits from the steadying influence of price equalizing policies, and should a period of falling values ensue, the Boards' built-up Reserve Funds will become available as a buffer.

The low quality of locally produced rubber should give Nigeria cause for concern. Plans have been announced for the establishment of a latex factory, and, in addition, expert advice is being sought to provide for improved grading standards and purifying methods, with the object of making consignments more acceptable to consumers. The preferential export duty for higher grade rubber introduced in the 1953 Budget should prove an incentive towards the improvement of production processes.

Efforts are being made to produce tobacco of a grade comparable with well-known brands. The programme is being handled by the Nigerian Tobacco Co. Ltd., and seems to be an instance where industrial and agricultural development will go hand in hand. Large modern factories are envisaged for the Ibadan and Port Harcourt areas, where within a few years it is hoped that only Nigerian tobacco will be used for the manufacture of cigarettes. Meanwhile, farmers in the Northern and Western Regions are being encouraged to produce good quality Virginia-type leaf on an increasing scale.

A number of rice production schemes have been launched in Nigeria throughout recent years, some of which have been most successful, especially where mechanized methods have been brought to bear. It is interesting to note that while Nigeria imported 273,000 tons of rice in 1937, imports have now virtually disappeared.

The Oil Palm Produce Marketing Board continues to attain marked success in raising the quality of the oil produced, while the steady expansion of the Pioneer Oil Mill installations will enable yet further progress to be achieved. The experiment in encouraging the establishment of higher yielding Oil Palm plantations on a co-operative or joint-venture basis could, if it wins the success it deserves, do much to reduce basic costs of production and raise the level of income of the African farmer.

A potential source of supply of niobium and uranium was discovered in Northern Nigeria two years ago. Extensive research and sampling has taken place, although at this stage it is not possible to give an indication of its real worth.

One of the country's greatest needs to-day is the comprehensive overhaul and renewal of both the track and rolling stock of its railway. A higher degree of efficiency in the repair shops is essential, while the provision of new locomotives and freight wagons is long overdue, and until they become available in sufficient numbers, the movement of mechandise to Northern Nigeria and the evacuation of groundnuts produced there will continue to be seriously affected.

Road improvements, particularly in South-Eastern Nigeria, are helping to make produce and merchandise move more easily, and it is to be hoped that further progress will be achieved in dealing with similar works in other parts of the territory.

The formal opening of the Ibadan University Buildings in November is a milestone in the history of Nigeria's progress. Housed in fine buildings of modern architectural design with faculties of Arts, Science, Agriculture and Medicine, it is a proud monument marking the determination of the people's national aspirations. The more Africans that can obtain higher education of all kinds, technical as well as academic, in their own countries, the better.

The eyes of not only Africans in West Africa but in other parts of the continent are to-day focused on the achievements and performance of West Africans in the political and in other higher fields of human endeavour and achievement. Britain is watching, not without pride, the bold experiments in increasing self-government both central and regional, now under way in West Africa. It must always be remembered that while "politics" are easy to anyone with oratorical gifts, the responsibilities of executive government in every country are much more difficult.

GOLD COAST

For many years to come, cocoa is likely to remain the principal export of the Gold Coast. Although world prices are no longer at the peak reached a few years ago, cocoa is still a high-valued commodity, and the revenue obtained from its annual marketing has brought widespread prosperity. The output varies considerably each year, and during 1952 a total of 212,000 tons was exported, being 17,000 tons less than in 1951. To give an idea of the value of this crop, the current year's harvest realized the sum of £52,500,000, and, as a large percentage was sold to the U.S.A., its dollar value is of the greatest importance to the Sterling Area.

Steady progress has been made in combating swollen shoot disease, which has for a long time affected many producing areas. The process is an expensive one, and is likely to cost approximately £10,000,000 over the next five years in compensation grants for trees destroyed and their replacement by seedlings planted in new regions. This expenditure will be borne by the Marketing Board, under its great Cocoa Rehabilitation Scheme.

In addition to its cocoa wealth, the country possesses many other resources, and serious efforts are being made to increase the output of gold, manganese and diamonds.

The shipment of timber, principally high quality hardwoods, has declined through lack of demand on the part of Europe and America, although towards the end of the year there were signs of renewed activity.

Inflationary tendencies have been running at a high level on the Gold Coast during recent years, and, realizing the dangers, the Government is introducing new measures to keep down the rising cost of living. A National Food Board is at work to advise Government in the hope that a substantial improvement in the production and distribution of domestic food supplies will be achieved. The necessity for such measures is apparent in a country that possesses real wealth in exportable commodities, but falls short where production of several domestic crops is concerned.

The educational services have been expanded during the year, with the opening of secondary schools, training colleges and technical institutes. Construction work and equipment of new buildings for the University College and the Kumasi College of Technology continues apace, and within a reasonable space of time, first-class facilities should be available for those seeking higher technical instruction.

For some time past, in spite of difficulties, the Gold Coast railway can claim to have been the most successful anywhere in Africa, not only as regards the management but also the efficiency of African drivers and other operatives. Railway development is proceeding with the construction of the Achiasi-Kotobu line, and work will continue on the doubling of the track between Takoradi and Tarkwa.

Much activity is apparent at the site selected for the new harbour at Tema, where there are prospects of work commencing soon on the main breakwaters. This scheme, which forms part of a larger one bound up with the Volta Project, will call for very heavy capital expenditure, not only for the harbour area itself, but in the provision of roads and railways to link the port with the existing network of communications.

The much publicized Volta Scheme, with its objectives of developing the country's bauxite deposits for the manufacture of aluminium, the provision of electrical power and perennial irrigation, and the creation of a new deep water port has been an ideal that now looks like becoming a reality within the next few years. The scheme is a gigantic one, costing many millions, and far beyond the scope of Gold Coast finance. A recent White Paper sets out that it will be financed by a combination of public and private enterprise, involving the participation of H.M. Government in the United Kingdom, the Gold Coast Government and experienced British and Canadian aluminium interests.

Harbour extension work at Takoradi is still under way and represents one of Africa's largest post-war developments. These operations, which commenced in 1949, were planned in the expectation of increasing facilities from 1,000,000 tons to 2,000,000 tons annually. Experience has shown that the port is already dealing with cargoes to the extent of 2,250,000 tons a year.

The people of the Gold Coast have achieved a long cherished aim in the establishment of their own National Bank, entitled The Bank of the Gold Coast, which has been opened with feelings of justifiable pride, under the aegis of a Board of Directors composed mainly of Africans. It commences business with the guidance of experts and has highly trained African staff available in the eleven officers taken from our Bank's service and ten from another British Bank. Our feelings are those of goodwill and friendly co-operation towards this new institution, with whom we desire to work in harmony.

SIERRA LEONE

Work on the new deep water quay at Freetown is behind schedule, as a result of disappointing delays, and the middle of 1953 is forecast as a probable date for the fulfilment of the contract. The opening of this quay is being keenly awaited in commercial circles, that have hitherto suffered from the lack of modern facilities.

Constructional delays through shortage of plant and materials have retarded the final stages of the extension of Lungi Airport, and it will be a year or so before the Airport is able to deal with increased traffic.

The production of diamonds and high grade haematite ore continues to be satisfactory, and the output of chrome ore is exceeding all previous records. Mining has an important bearing on the prosperity of Sierra Leone, seeing that the value of minerals exported represents approximately 30 per cent of domestic exports. Additionally, the country's exports include palm oil, palm kernels, cocoa, kola nuts, ginger, groundnuts and piassava. A renewal of interest in the production and export of coffee is in evidence and as the quality is improving, increased marketable tonnage is anticipated.

The export of bananas on contract to the Ministry of Food continued throughout the year, and while their entry into the United Kingdom market has been regarded as an experimental venture, trade opinion suggests that they are of good quality and compare favourably with West Indian types.

The road network in the hinterland leaves much to be desired, and the greatest encouragement Government could give to its inhabitants is the provision of highways, and feeder roads to the railways. Development on such lines represents a necessity for the future economic advancement of the country.

THE GAMBIA

The fortunes of this colony have for many years been allied to the value of its annual groundnut output, as it does not possess a secondary agricultural crop of any magnitude, neither are there minerals for export.

In good seasons, groundnut crops to the extent of 60,000 tons may be envisaged, but production figures are very variable, and in consequence the planning of any development policy has to be elastic. Many of the optimistic schemes projected during the early post-war years, when the country's finances were more stable, have had to be deferred, as the Government already find difficulty in balancing the Budget, without imposing additional taxation burdens on the population.

Unfortunately, the outlook has been dimmed by a sharp deterioration in the quality of exportable groundnuts, both this year and last, and unless quality improves the disposal of the future crops may present difficulties. With these factors in evidence, a system of inspection regulations has been instituted in the hope of improving existing low standards.

The new deep water wharf opened earlier in the year is in regular use by sea-going vessels, and is a great advance on former primitive arrangements.

* * *

Our Bank has had a long history and extensive experience throughout West Africa, and, having sufficient financial resources at its disposal, coupled with a progressive policy, is ready to take its full share in the many tasks and opportunities that lie ahead.

BALANCE SHEET, 31st MARCH, 1953

LIABILITIES

	£	1952 £
CAPITAL—		
Authorised 400,000 Shares of £10 each ..	4,000,000	4,000,000
Issued 300,000 Shares of £10 each, £4 per Share paid up	1,200,000	1,200,000
RESERVE FUND including Share Premiums £400,000	1,100,000	1,050,000
BALANCE OF PROFIT carried forward	101,704	99,298
CURRENT, DEPOSIT AND OTHER ACCOUNTS, Provision for Taxation on the Profits to date and Inner Reserves	2,401,704	2,349,298
	58,773,777	54,566,977
PROPOSED FINAL DIVIDEND, less Income Tax ..	46,200	37,800
LIABILITIES ON ACCEPTANCES, CONFIRMED CREDITS AND OTHER ENGAGEMENTS ON BEHALF OF CUSTOMERS	7,630,591	9,348,576
NOTE : Balances in West African Currency have been converted at par and Foreign Currencies at rates ruling on 31st March, 1953.		
	£68,852,272	£66,302,651

HARLECH, *Chairman.*
SYDNEY PARKES, *Deputy Chairman.*
W. F. BECKER, *Deputy Chairman.*

ASSETS

	£	£	1952 £
CASH IN HAND AND IN TRANSIT AND WITH BANKS AND AGENCIES		6,766,164	7,812,945
MONEY AT CALL AND AT SHORT NOTICE ..		27,000,000	22,239,286
BILLS OF EXCHANGE—			
Treasury Bills	4,800,000		1,000,000
Other Bills	675,653		763,511
		5,475,653	
INVESTMENTS AT OR UNDER MARKET VALUE—			
British Government Securities ..	9,380,623		10,183,670
Other quoted Securities	157,231		187,902
		9,537,854	
LOANS, ADVANCES AND OTHER ACCOUNTS, less Provision for Bad and Doubtful Debts ..		12,295,375	14,624,302
		61,075,046	56,811,616
LIABILITIES OF CUSTOMERS FOR ACCEPTANCES, CONFIRMED CREDITS AND OTHER ENGAGEMENTS		7,630,591	9,348,576
PREMISES AND FURNITURE at cost, less amounts written off		146,635	142,459
		£68,852,272	£66,302,651

FRANK G. WRIGHT, *General Manager.*
ALLAN WALKER, *Chief Accountant.*

Profit and Loss Account for the year ended 31st March, 1953

	£	1952 £
CONTINGENCIES ACCOUNT	125,000	100,000
RESERVE FUND	50,000	50,000
INTERIM DIVIDEND, less Income Tax	18,900	18,900
PROPOSED FINAL DIVIDEND, less Income Tax	46,200	37,800
BALANCE CARRIED FORWARD	101,704	99,298
NOTE : Directors' Remuneration amounted to £19,865 which included other Emoluments £7,193 and Pension for past services in another capacity £1,172. Last year the corresponding amounts were £12,181, £803 and £1,004.		
	£341,804	£305,998

	£	1952 £
BALANCE BROUGHT FORWARD	99,298	93,969
PROFIT FOR THE YEAR after providing for taxation thereon and after transfers to Inner Reserves, out of which provision has been made for diminution in value of assets	242,506	212,029
	£341,804	£305,998

REPORT OF THE AUDITORS TO THE MEMBERS OF BANK OF BRITISH WEST AFRICA LIMITED

We have obtained all the information and explanations which, to the best of our knowledge and belief, are necessary for the purposes of our audit. In our opinion proper books of account have been kept by the Bank so far as appears from our examination of those books and proper returns adequate for the purposes of our audit have been received from Branches not visited by us.

We have examined the above Balance Sheet and annexed Profit and Loss Account which are in agreement with the books of account and returns of the Bank. In our opinion and to the best of our information and according to the explanations given us the said Accounts give the information required by the Companies Act, 1948, in the manner authorised for a Banking Company and on this basis give a true and fair view, in the case of the Balance Sheet, of the state of the Bank's affairs at 31st March, 1953, and, in the case of the Profit and Loss Account, of the profit for the year to that date ascertained in the manner therein indicated.

London, 4th June, 1953.

PEAT, MARWICK, MITCHELL & CO., *Chartered Accountants, Auditors.*

SOUTH CROFTY, LTD.

The 47th Annual General Meeting of South Crofty, Ltd., was held on June 11, at Pool, Redruth, Cornwall.

Mr. J. P. A. Harvey, J.P., Chairman of the Company, presided.

The Chairman in the course of his speech referred to the sad loss the board had suffered by reason of the sudden death of Mr. T. Wallace Evans on January 12 last, coming as it did so soon after the death of Mr. Harry Rich. The directors had appointed Sir Gilbertson Smith and Mr. Thomas Pryor, M.I.M.M,. to the Board.

The accounts for the year ended December 31, 1952, showed a profit, after taxation, of £16,698.

The ore milled at the mine was 44,182 tons, as compared with 28,517 tons in 1951. The recovery of black tin was 475 tons, which realized £303,641. Arsenic sales were greater than in 1951, but wolfram values dropped away.

Costs at the mine fell to £5 19s. per ton milled, notwithstanding the increases in prices of essential materials used at the mine. The lower cost per ton was due to the larger tonnage crushed compared with the previous year. The increase of tin production for the year was partly the result of the importation of Italian miners, of whom there are now 39 employed on the property.

As soon as the new pumps were satisfactorily at work the mine should be able to show a profit at lower prices for tin metal than those obtained in 1952. The new pumps had not been delivered, and although every effort was being made to hurry up the manufacturers they were not able to give a firm date for delivery. Most of the electrical equipment in connection with that plant was already on the property and some was already installed.

The Chairman added:—

"I would like to draw your attention to the large proportion of earnings which are paid away to the Government in local and national taxation. The amount available to be spent on the re-equipment of the mines after paying taxation at the present rates in force is most inadequate. This country is in need of dollars and the tin production of this country and the Empire makes a great help towards bridging the dollar gap, but the present level of taxation on wasting assets tends to discourage rather than stimulate production."

During the five months of 1953 there had been millled 20,943 tons of ore for a recovery of 229.69 tons of tin concentrates.

The directors wished to join him in expresssing appreciation of the loyal and devoted services to the company by the general manager and the staff who had had many difficult situations to overcome.

The report and accounts were adopted and the final dividend of 3d. per share (5 per cent), making 10 per cent for the year ended December 31, 1952, was approved.

MINING ENGINEER required as Mine Superintendent and Branch Manager of British Organization to take full charge of operations in Turkey. Applicants should be aged 35-45. Knowledge of French useful. Starting salary up to £120 per month, a proportion of which may be paid in this country. Apply Box ME 535.

BURMA MINES LIMITED

The following summarizes a report of the operating results of Burma Corporation (1951) Limited (Incorporated in the Union of Burma) for the three months ended March 31, 1953, together with progressive details of Ore Extraction, Production and Estimated Revenue and Expenditure for the nine months ended March 31, 1953.

ORE EXTRACTION

Quarter ended September 30, 1952	2,088 tons
Quarter ended December 31, 1952	7,817 tons
Quarter ended March 31, 1953	9,991 tons
Total for nine months ended March 31, 1953	19,896 tons

PRODUCTION

Quarter ended	*Concentrating Ore Milled (tons)*	*Assays Oz. Silver*	*% Lead*	*% Zinc*
September 30, 1952	3,814	12.59	14.235	10.44
December 31, 1952	12,273	13.942	15.373	12.556
March 31, 1953	12,805	13.174	14.731	11.643

Marketable Products were as follows:

	Refined Lead Tons	*Refined and Doré Silver Oz.*	*Copper Matte Tons*	*Nickel Speiss Tons*	*Concentrates 57%—58% Zinc Tons*
September 30, 1952	268.51	—	—	—	410.27
December 31, 1952	709.577	121,931.813	65.50	90	1,820.40
March 31, 1953	1,533.000	85,581.000	—	—	1,760.00
Totals for nine months ended March 31, 1953	2,511.087	207,512.813	65.50	90	3,990.67

ESTIMATED REVENUE AND EXPENDITURE

	For Quarter ended March 31, 1953		*For the nine months ended March 31, 1953*	
Estimated Gross Revenue	K.22,40,800	£168,060	K.51,18,272	£383,870
Estimated Operating Expenditure	K.29,82,800	£223,710	K.74,73,632	£560,522
Estimated Excess of Expenditure over Revenue	K.7,42,000	£55,650	K.23,55,360	£176,652
Estimated Taxation	Nil	Nil	Nil	Nil
Estimated Depreciation on Machinery and Plant	K.1,15,400	£8,655	K.2,83,206	£21,241
Capital Expenditure	K.4,55,300	£34,148	K.7,94,673	£59,601

The Sterling figures shown are based on a Rate of Exchange of 1s. 6d. per Kyat.

GENERAL

During the Quarter good progress has been maintained in the rehabilitation of underground working places at the Bawdwin Mine. Ore Extraction for the Quarter ended March 31, 1953, at 9,991 tons, although exceeding the total extraction for the preceding two quarters, has not come up to expectations and the maximum monthly output so far obtained at 3,350 tons, remains well below the immediate monthly target of 8,000 tons of Ore.

The number of underground workers increased from 1,040 to 1,273 during the Quarter, but the majority of recruits are still under training and, as yet, incompetent to man additional stopes and thereby appreciably to augment mine output.

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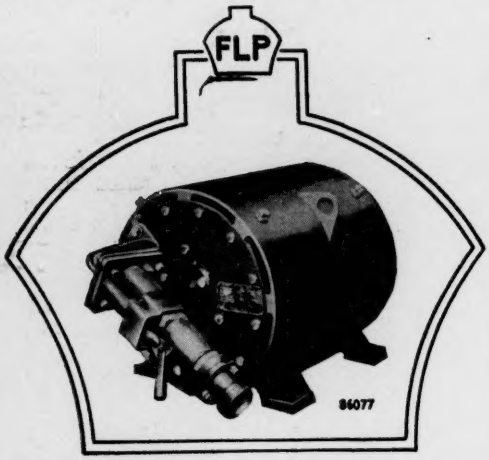

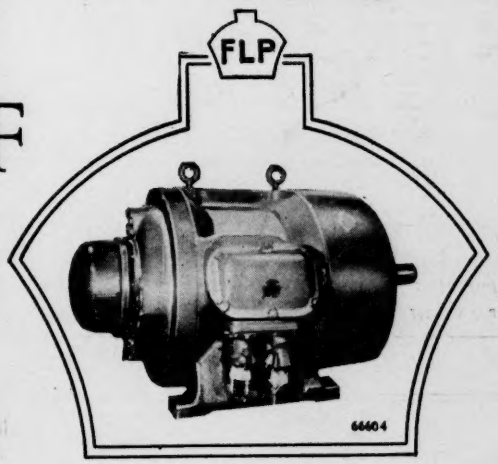

Top Left: *Totally-enclosed fan-cooled flameproof squirrel-cage motor, type KF.*
Top Right: *T.E.F.C. flameproof slipring motor, type FW.*

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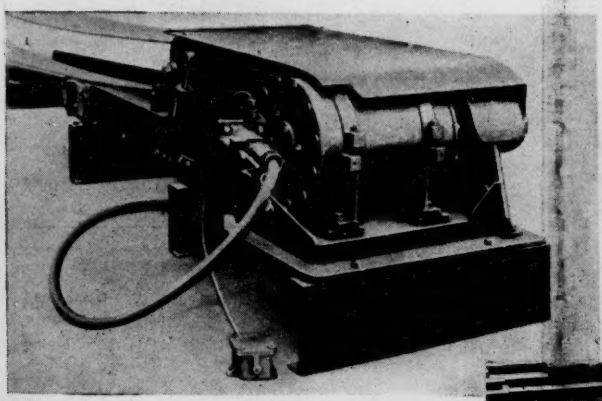
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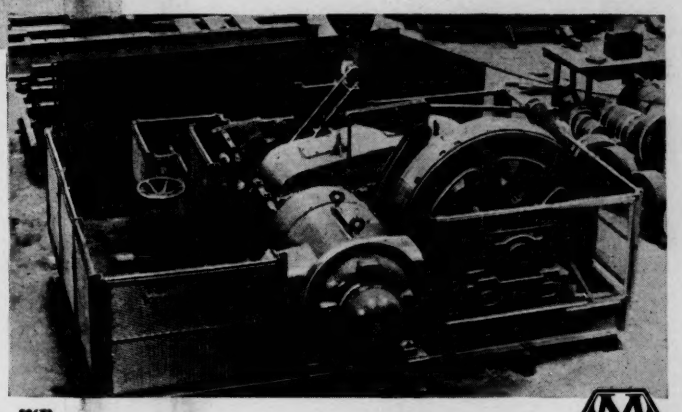
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